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CONSERVATION OF CHILD LIFE A NATIONAL RESPONSIBILITY *

L. R. DEBUYS, B.S., M.D.
NEW ORLEANS

Every man was a baby. Unfortunately most men have forgotten the fact. Not the least of these is the majority of the medical profession, judging from their lack of desire for information about and their want of interest in the welfare of infants. The medical profession must interest itself in the saving of the lives of the babies, if the future population of the country is to be considered. Far-sightedness was never more necessary than at the present time. The adage, "Do unto others as you would be done by" never had a greater application than when applied to the infant. Let us mature adults, and particularly members of the medical profession, be leaders and advisers of our lay brothers and let us put ourselves in the place of the infant. What would we like the adults of the nation to do for us? This is easily and readily answered in the heart of every one. Then why not do for the infants and children what we would in their place have done for us? Naturally the lay members of the society look to their medical advisers to lead the way. This can be done only by knowing it ourselves, and it can be known only by interesting ourselves in the subject. This does not apply to the members of the medical profession who have been working in behalf of child welfare, more particularly the pediatrician, but to those members whose work in most instances is so spectacular or confined to such narrow paths as to cause them to forget that there are other branches of medicine, and that they were once infants and children themselves.

Let us not be short sighted and consider only the requirements as regards our Army of today during this great world crisis, but let us benefit, if not by the advice of those at home who are advocating energetic activities in behalf of early life, at least by the experiences of the other great nations of the world who now appreciate more than ever the necessity of keeping the birth rate as far above the death rate as it is possible to do.

The two great alarm clocks of public sentiment are dollars and human lives and unfortunately it usually requires a tremendous loss of either or both to cause a thorough awakening. We are now experiencing both and are gradually being awakened, but unless there is a proper and complete realization of the necessity of the conservation of early life, the awakening will be decidedly appalling.

In any successful mechanical or architectural work, the ultimate outcome by analyses will be shown to depend on the proper fundamental factors utilized in its accomplishment. It is not different in regard to the human being, but because of the more finely adjusted and delicate factors, more thorough consideration of the fundamentals must be given, and the completed being must have the proper attention during his various periods of growth and development so that the fully grown adult may be of maximum efficiency and of greatest value to society. It is undeniable that the loss of life is greatest in the first two years, and during this period the nearer to birth the greater the death rate. It is very likely, also, that the loss of life in utero may approach if not exceed the death rate of the first few months of extra-uterine life. At least the work of conservation of the human life begins before birth and, yes, even before conception. The problem is one which concerns us most vitally and needs most careful study.

It is a noteworthy fact that the rejections by the examining boards for the Army in the United States were between 25 and 30 per cent., and in England the percentage of healthy persons accepted in the army was about 40 per cent. of the applicants, there being a still further number who did not apply. Are these facts not significant as to the ultimate human products in these two great countries during the past? England has awakened to her problems and has achieved wonderful results, and her future will undoubtedly be benefited. Why should we have to follow? Why not lead? No time was ever more propitious than now. Beginning during this era of educational propaganda, our great country should and can safeguard its strength and growth so that its future will be secure. It is essential to enlist the assistance of the layman in order to derive the greatest cooperation. By so doing, public sentiment may be so framed as to have proper legislation enacted which will facilitate the coordinated efforts of the various agencies employed in behalf of early life, working to a common end.

In many places it may be that necessary laws are already on the statute books, but where they are not they should be passed. Laws are worse than useless, if when enacted they are not enforced. Hence, it is necessary to enlist public sentiment that the laws after once being passed may also be applied.

The great work of the conservation of child life should include the following periods: first, parents of the future children; second, prenatal care; third, parturition; fourth, newly born; fifth, infancy; sixth,

* Chairman's address, read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

the neglected period—from 2 years to school age; seventh, school child to puberty; eighth, puberty; and ninth, adolescence. Naturally it will be seen that there is a circle involved which after being properly regulated will become an easy matter to supervise, but we are confronted with the problem today which is to be attacked at each one of these periods at the same time. The first period has reference to the venereal problem which has been shown to be greatly influenced favorably by the plans already practiced by our Army. The municipal and state health boards throughout the country are now assisting the government by having proper laws passed making venereal diseases reportable. The results of these laws will surely show the wisdom of such legislation which will redound to the credit of the nation.

The second period is closely associated with the first, but has not yet received the attention it deserves. The same may be said of the third, fourth, fifth and sixth—clearly those periods of life on the supervision of which is founded the strength of a nation and its future. Greater attention has been given to the seventh, eighth and ninth, though there is yet much to be done in these periods.

TABLE 1.—RESULTS OF SAVING OF LIFE IN THE UNITED STATES*

Years	Lives Saved	Death Rate		No. Lives Lost	Lives Remaining	Value		Amount in Dollars
1 to 5	500,000	0.3%	=	1,500	498,500	$ 500	=	$ 249,250,000
5 to 10	498,500	0.026%	=	130	498,370	1,500	=	747,555,000
10 to 15	498,370	0.019%	=	95	498,275	2,500	=	1,245,687,500
15 to 20	498,275	0.031%	=	154	498,121	3,500	=	1,743,423,500
					1,993,266			$3,985,916,000
				OR				
1 to 5	750,000	0.3%	=	2,250	747,750	$ 500	=	$ 373,875,000
5 to 10	747,750	0.026%	=	194	747,556	1,500	=	1,121,334,000
10 to 15	747,556	0.019%	=	142	747,414	2,500	=	1,868,535,000
15 to 20	747,414	0.031%	=	232	747,182	3,500	=	2,615,137,000
					2,989,902			$5,978,881,000

* At the end of twenty years, the saving in life, and life expressed in dollars would be 1,985,266 lives and $3,985,915,000, respectively, for a yearly saving of 100,000 lives; or 2,989,912 lives and $6,008,881,000, respectively, for a yearly saving of 150,000 lives, allowance being made at the present death rate for loss of life during each five year period among the lives previously saved.

With the loss of life incident to war, the value on human lives expressed in dollars will necessarily be increased.

The values given in the table are those of Irving Fisher, in Table 2, using the mean for the various periods.

TABLE 2.—REPORT OF IRVING FISHER ON NATIONAL VITALITY, JULY, 1909

Age	Net Worth in Dollars	Age	Net Worth in Dollars
0	90	30	4,100
5	950	50	2,900
10	2,000	80	700
20	4,000		

Attention is particularly directed in this paper to the second, third, fourth, fifth and sixth periods.

More or less provision has been made for each of these periods, with probably the exception of the sixth or neglected period (so named for the lack of consideration accorded it), and yet during this period of rapid growth the child is exposed to more outside influences than at almost any other time of life. It is during this time that many illnesses may be averted which may have their immediate or remote ill effects.

More attention is given by our government to animal and plant life than to any one of the five periods enumerated and purely because of shortsightedness. If our municipal, state and national governments do not realize the importance of their burden, it should be taken up as a war measure. It is as much so, considered from the point of view of the future of the nation, as the safeguarding of the soldier of today. Had proper attention been directed to this work a generation or so ago, our present national strength would be far greater.

Imagine, as is shown in Table 4, a yearly loss of over 300,000 lives, one half of which, or about 150,000, is acknowledged to be due to preventable causes and not yet the awakening of the government to this responsibility. Imagine this tremendous loss of life and yet no adequate measures adopted by the medical section of the Council of National Defense for its cessation as a war measure! Should we have the loss of as many lives among our soldiers, or even half as many—what a howl it would cause throughout our whole nation. And yet, are not the infants potential soldiers? If viewed from no other angle but an economic one, would it not be a saving to the government, as shown in the figures of Tables 1, 2 and 3, to look to the conservation of its infant population?

It cannot be said yet what will be the result of the world war on the birth rate and death rate in this country, but the effect of war on warring countries is reflected in a diminished birth rate and usually an increased death rate, as shown in Table 5. It is hardly conceivable how this country can be an exception, particularly when added to the influencing factors incident to war all the allied nations are dependent on her for more or less foodstuffs, which will result, at least, in a more limited and restricted diet for the pregnant women, nursing mothers, and infants and children in the United States.

TABLE 3.—AVERAGE SOCIAL VALUE OF AN INDIVIDUAL*

United States	$4,720
England	4,140
Germany	3,380
France	2,900
Austria-Hungary	2,720
Russia	2,020

* The social value of an individual is that which the individual will restore to the community in any way whatever from his personal profit or earnings. (After Barriol, M. A.: Jour. Roy. Statistical Soc., 1915, 88, 365.)

It is, therefore, incumbent on us pediatricians to assist to our utmost in this conservation work in view of the losses incident to war, in order to provide for the future of our nation; but the federal government should direct the work.

Imagine what the saving of 100,000 or 150,000 lives a year for twenty years would be to the nation—a saving of 1,993,266 to 2,989,902 lives, or a population from nearly two to nearly three millions greater than otherwise it would be, as shown in Table 1. Indeed, the increase resulting from proper supervision would be greater, because, with the educational propaganda carried on with the governmental stamp, the people would learn to think more of their health and mode of living, and in many ways the entire country would be benefited. The result would be a bettering of the nation with persons of stronger and healthier constitutions who would live longer and enjoy more comfortable later lives.

It is evident that the problem is an economic one as well as a humanitarian one and may be measured in

dollars and cents. While it is shown in Table 4 that there is an estimated loss of 315,129 human lives under 5 years of age, more than half of which are acknowledged to be due to preventable causes, Table 1, based on the saving of only 100,000 or 150,000 lives a year, gives an idea in money of what the saving of

TABLE 4.—SEX PROPORTION AT BIRTH AND SEX INFANT MORTALITY IN THE UNITED STATES *

	Total	Per 1,000 Population	Per Cent.
Births	776,304	24.9	
Deaths (all ages)	436,114	14.0	
Births greater than deaths	.....	10.9	1.1
Births:			
Male	398,615	.....	51.3
Female	377,689	.....	48.7
Male greater than female	.....	.....	2.6
Deaths:			
Male (infants)	.....	110	11.0
Female	.....	89	8.9
Male greater than female	.....	.....	2.1
Remaining:			
Male	254,768	.....	50.75
Female	244,075	.....	49.25
Male greater than female	.....	.....	1.5

Estimated Deaths in Same Area (436,114)	In 31 per Cent. of Population	In Total Population (Estimated)
Deaths in same area of children under 5 years: 22.4% of 436,114	97,690	315,129

* From Statistics in Registration Area; 31,150,803 or 31 per cent. of total estimated population.

the very conservative numbers will amount to in twenty years, namely from $3,985,916,000 to $5,978,881,000, after which time the saving will be increased in a compound ratio owing to these saved lives becoming parents.

These calculations are estimated on the figures obtainable from those registration areas where births and deaths are recorded, which areas comprise only a part of the population of the United States. Many municipal and state political organizations are willing to favor national requests even when they are in conflict with their individual views, whenever they are shown to be of value as war measures. It cannot be denied that the conservation of the nation's resources is a war measure particularly when it concerns her man power or potential army. This is the time, therefore, that all movements should be uniform and nationwide. The commencement of this work, in order to be able to determine what its progress will be, is to secure reliable information now for future comparisons. The proper control of registration of births and deaths is the fundamental work for this statistical guide.

Complete registration of births and deaths is a goal which can be reached in a short time, if Congress will enact a law placing the matter under federal control.

The importance of complete registration of births and deaths is apparent to all. The number of births in a locality and the number of deaths under 1 year of age must be known, or no accurate knowledge can be had of the infant mortality rate—a most reliable index of the community well being. Other valuable health indexes are death rates for certain specific causes, as typhoid fever, tuberculosis, etc.

So far, the registration of births and deaths has been under the control of state and local authorities. In some parts of the country, good registration laws have been enacted and are being well enforced, but in other sections, little has been done along this line. The net result is that only twenty-eight of the forty-eight states are now in the registration area for deaths, and only twenty states in the registration area for births—areas where the registration laws are good and registration is at least 90 per cent. complete. To be sure, conditions are improving each year and the states are realizing more and more the importance of complete registration of births and deaths, but if it be left to the states to enact and enforce adequate laws, it may be a hundred years before birth and death registration will be even approximately complete throughout the United States.

On the other hand, federal control would insure at once the uniform enforcement of registration throughout the country.

It would not be necessary to change the good registration laws now existing in many states nor to replace the competent registration officials throughout the country. With a federal law calling for the proper registration of births and deaths, providing penalties and empowering the Department of Commerce to prosecute when necessary, the existing registration machinery in the various states, if kept up to a federal standard, could be allowed to remain.

Inasmuch as the constitution provides that a representative must have attained the age of 25 years, a senator the age of 30, and a president the age of 35 years, it is evident that Congress has the power to enact legislation for the registration of births, also, since the selective draft laws call for men of specified ages, and as it has been difficult in some instances to prove the ages of these men, the enactment of proper laws for the registration of births and deaths is now a federal necessity.

Undoubtedly there are communities doing maximum efficiency work. Also, there are communities doing their best with variable results and, lastly, there are those not doing their part either because of inertia, or because they are not yet awake.

In order to accomplish the greatest results, there should be a uniformity in plan, interesting every state to enact laws which should be uniform, which should conform to those which the nation should adopt and which should be enforced properly.

TABLE 5.—BIRTH AND DEATH RATES IN COUNTRIES ENGAGED IN WAR WHERE COMPARATIVE STATISTICS ARE AVAILABLE

Country	Birth Rate per Thousand					Death Rate per Thousand				
	1913	1914	1915	1916	1917	1913	1914	1915	1916	1917
United Kingdom.	24.1*	....	22.2	21.1#	....	14.3*	....	15.6	14.6†	
England, Wales	24.1*	....	22.0	20.9#	17.8	13.8*	....	15.7	14.4‡	14.1
Scotland	25.5*	....	23.9	22.8	....	15.5*	....	17.1	14.6	
Ireland	22.8*	....	22.0	21.1	....	17.1*	....	17.6	16.5	
France	19.0*	18.0§	....	....	....	17.7*	19.6§			
Italy	31.7*	31.1§	....	....	....	18.7*	17.9§			
Roumania	42.1*	42.5§	....	....	....	25.9*	23.8§			
Germany	20.9¶	....	....	21.3¶	10.9¶	15.8¶	....	....	10.5¶	13.1¶
	28.3°	....	....	....	....	15.8°				

* Figures from Annual Report, Reg. Gen. Eng. and Wales for 1915.
# Rates based on population estimated for the purpose by Department of Vital Statistics.
† Includes only civil deaths and population as regards England and Wales.
‡ Civil population only.
§ Latest report from "Statesman's Year Book" for 1917.
¶ "Vital Statistics in Germany" in the Daily Review of the Foreign Press, April 1, 1918, taken from Veröffentlichungen des kaiserlichen Gesundheitsamts, 1917, 41. Statistics from twenty-five cities with a population of 200,000 or more inhabitants, the aggregate number being 11,000,000, or one sixth of the total population of the German Empire.
° Figures from "Statistiches Jahrbuch für das deutsche Reich," for 1915.
The greater death rate for Germany in the civil population for 1913 over 1916 and 1917 is explained by the larger death rate under 1 year in 1913 before the birth rate had been so tremendously reduced.

The direction of the work should be by or with the advice of medical men who are properly qualified in child welfare work, and who have devoted their endeavors to the early years of life.

Great appreciation should be felt for the various bodies already doing their utmost in this great work, unassisted by the government, and their entire cooperation should be further solicited which would be greatly aided by a national backing. There should be a coordination of all available agencies, all working to a common end and with the closest cooperation, which is absolutely essential. There should be no attempt at individualizing, but the spirit of self-sacrifice should prevail and methods should be adopted to produce the quickest, best and most uniform results.

Experience has shown that with governmental influence the most expeditious results may be obtained, and since the conservation of child life is such a vital issue to the welfare of a government in providing for its future strength and protection, its jurisdiction should be exercised in this work as much so as in the proper training and conserving of the youths of today who were the children of yesterday.

As adequate measures are not now being employed in the conservation of child life, a certain amount of responsibility lies with the pediatric men whose representative body in the American medical profession is this section. Your chairman has felt this and wishes to bring it to your attention for your consideration. Let it not be said in the future that the pediatric men of the medical profession in the United States were derelict in their duties. Some definite stand should be taken, expressed in the form of a resolution and placed before the proper authorities. This should be done not as a means of disposing of the matter, but in such a way as to place the responsibility with them, assuring them of our earnest, sincere and anxious desire to cooperate in every way possible by placing ourselves at their disposal in this work.

Pus Infection in the Industries.—Albaugh, director of the Division of Industrial Hygiene of the Ohio State Department of Health, in the Ohio *Public Health Journal*, April, 1918, summarizes the report of the division on the presence of furunculosis and wound infections among certain classes of factory workers in the state. These afflictions are said to be unusually prevalent among operatives of lathes and cutting and milling machines who come in contact with cutting compounds and cutting oils, and occur with greater frequency in summer. He says this represents an important economic loss to the company as well as to the men affected. Cutting compounds and cutting oils are vehicles for carrying pus-forming bacteria and are responsible for engendering and spreading much furunculosis and wound infection. The oils and compounds used appear inert to bacterial life, being neither germicidal, antiseptic nor directly supportive. Employees are probably most responsible for the infection of the oils, but accidental contaminations can occur and sterilization is probably necessary. Employees should be educated against spitting into lubricants and reservoirs, interchange of towels and wiping rags; clothing should be frequently changed and cleansed and they should seek prompt dispensary care of all wounds and skin eruptions. Only sterile oil products should be purchased from the manufacturer; heat sterilization of reclaimed oil should be carried out before it is redistributed. Disinfectants mixed with the oil are of doubtful value. A commercial cresol disinfectant with a phenol coefficient of 3.21 in the presence of organic matter was not effective unless used in a 2 per cent. solution, and in this strength its use is impracticable, according to investigations carried out.

PROTECTION OF INFANCY IN FRANCE

WHAT HAS BEEN DONE AND WHAT REMAINS TO BE DONE IN THE FIGHT AGAINST INFANT MORTALITY *

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FRANCE

The struggle against infant mortality is one of the most urgent problems at present before France. The birth rate is already much diminished because of a variety of factors which cannot, however, find place here; also, we have suffered most heavily in the present war.

Since shortly after the end of the nineteenth century, infant mortality had been noticeably diminished, thanks to the progress of hygiene, but nevertheless not sufficiently, and, since the beginning of the war, as a result of economic changes, we are obliged again to note an increase. If France wishes to continue her rôle in the world, it is necessary that she protect her children more and more.

Formerly in France as in all countries, infant mortality was very great, but the families were much more numerous, and thus the population increased, as is evidenced by the colonization of Louisiana and Canada. In the sixteenth and seventeenth centuries, the families often numbered ten or twelve children, whereas today a family of seven is considered large; but of these ten or twelve children, six or eight were frequently lost in the first years of life. We find the proof of this in the so-called *livres de raisons*, which were kept annually by the head of the family in certain of our old French provinces. There were written in these diaries not only the number of receipts and expenses, the revenues of the farm, the hay or wheat in the granary, the wool of the sheep, but also the principal events of the family life—the marriages, births, baptisms and the illnesses of the children. It frequently appeared that a second or third son was christened the same name as the first; for example, "Pierre" might be found three times because of the fact that the previous children had died at an early age, and in order to preserve the name of the family, the same name had been given to another who had been born; and if this one died, it was given to still another.

At this time only the strongest children survived, or those whom the mother cared for particularly during the first few months, as a result of an instinctive knowledge. In order to diminish the mortality, the children were sent to the country as soon as possible after birth. This custom of sending the children to the country was very general among the French noblesse and bourgeoisie of the eighteenth century.

It is to Jean-Jacques Rousseau that we owe the first campaign in France in favor of maternal nursing.

PUERICULTURE

Maternal nursing is the basis and the natural method for the protection of infancy. To have every French mother practice it is the object of our league against infant mortality, of which I shall speak later. But this first feeding by the mother is not always possible, and

* Read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

in some cases it must be supplemented by cow's milk. On the other hand, even the best mother who nurses her own child must still be guided by the laws of hygiene everywhere necessary, but especially so in the great modern cities.

After having trusted for too long a time to maternal instinct and good sense, which are useful but not sufficient, the scientific progress of the nineteenth century has demonstrated that in all divisions of activity, scientific methods are superior to empiricism, and so for the children there has been constructed a true science of puericulture, following the word of Pierre Budin, founder of the first "Children's Clinic."

In fact, it is from France, under the influence of this eminent teacher, too soon removed from his activity in French medicine, that this movement originated. My country has already accomplished a great deal along these lines, but it has not been possible to do all that was desired. At the inauguration of the Exposition of Puericulture of the American Red Cross at Lyons, my friend Jean Lépine employed a most accurate comparison. He said that for the last fifty years France had been comparable to a man with his right arm constantly raised for his defense, and who could only employ his left arm for his immediate needs.

If our French Red Cross could do nothing for the children before the war, the reason lay in the fact that it was obliged to prepare for the wounded which were expected, and every one knows that it has not failed in its task.

The civil department of your American Red Cross came, therefore, to offer its services, at the side of many other organizations in the struggle against infant mortality. Not only, my dear friends, do you collaborate with us on the field of battle to free the world from German barbarity—from might over right—but also to aid us in reconstructing the France of the future, in order that, with you, she may stand with arm outstretched, holding the flaming brand of liberty. We are deeply grateful for all that you have done, and we thank you from the bottom of our hearts.

MEASURES FOR THE PROTECTION OF CHILDREN

I will now explain what we have already done, in order to protect our children, what remains to be done, and that which we hope to accomplish, with your fraternal aid.

The works of charity, organized for abandoned children, date from several centuries ago, and the name of St. Vincent de Paul is intimately associated with the creation of orphanages. They were especially developed in the eighteenth and nineteenth centuries. The Hôpital des Enfants assistés at Paris and the Service des Enfants assistés, in our Ministry of the Interior, have made an official organization of these. But because of the fact that the mortality was very great in these agglomerations of children in the orphanages of the cities, the Assistance publique (the great governmental charity of France) organized the placing of children in the country in peasant families, guaranteeing the success of this proceeding by requiring administrative and medical supervision. On the other hand, with the beginning of mechanical industries, Marbeau, in 1844, founded the so-called "crèches," that is to say, "day nurseries," destined to receive children while the mother was working in the shops or factories. They have multiplied and are now very numerous in the great cities and industrial districts.

In 1846, a great philanthropist of Mulhouse in Alsace, Jean Dolfuss, founded the "Association for Pregnant Women" which gives an indemnity during the period of confinement and nursing to the workwomen of the factories. Along this same line of progress there originated a little later, the "Mutualité maternelle," which had for its object the aid of the mother at the time of confinement. Each woman gives a small amount of money annually, which is increased by gifts made by charitable persons. This capital permits, for all the participants at the moment of accouchement, the services of a physician or of a midwife, and also the receipt of an allocation permitting the woman to remain at rest for some weeks after the confinement. The results obtained by the Mutualité maternelle have caused a decrease in infant mortality of at least 70 per thousand births, and what is further very important, the passage of the Paul Strauss Law, of which I shall speak later.

France, in fact, possesses two principal laws destined for the protection of early childhood. The first was promulgated under the leadership of the eminent philanthropist, Théophile Roussel, and is known in all countries as the Loi Roussel. It was passed in the year 1874, and has for its particular aim the protection of children placed by their parents in nursing homes. Every child under 2 years, confided to a wetnurse, an ordinary nurse, or simply another woman for care, comes automatically under government supervision.

The second law, that of Paul Strauss, was adopted shortly before the war, in June, 1913, with the addition of certain amendments in June, 1914. It has to do with the protection of the mother during pregnancy and of the mother and child during the first four weeks after birth. It permits the mother to have complete rest and to begin the nursing of her child under the best possible conditions. This law has been a decided step in advance, but its success will depend on whether or not assistance is given and supervision maintained during all of the first year at least.

This surveillance exists especially in the districts where the mothers have the advantage of nursing clinics. Because of this, there was founded in France in the year 1902, by Budin and Paul Strauss, the Ligue contre la mortalité infantile or in other words The League Against Infant Mortality, which aims at the encouragement throughout the country of the formation of these so-called *Consultations de nourissons*, or "nursing or baby's clinics." Further it aims to aid all societies, private and public, which have to do with the protection of mothers and young children.

The first Consultation de nourrissons was founded by Pierre Budin, professor of obstetrics in l'Hôpital de la Charité, at Paris, in 1892. He desired especially to organize a system which would "follow up" the children born on his service, and which would furnish necessary counsel and aid to the mothers during the first year. He obtained excellent results, and very soon similar clinics were established in various hospitals and dispensaries of Paris. Further, his example was promptly followed in the provinces, and in 1894, Dufour founded at Fecamp, a small town in Normandy, an analogous institution, to which he gave the name of Goutte de lait, literally translated meaning, "a drop of milk." This institution aimed at diminishing the infant mortality by employing the following methods:

1. Giving to the mother counsel and encouragement, inducing her thus to nurse her own child.

2. In case her own milk was insufficient to explain supplementary feeding to her and supply her with the necessary sterilized milk for this purpose.

3. In case the mother by reason of certain physiologic or material causes was unable to nurse her child at all, to furnish her with clean, sterilized milk, indicating to her the rules for this artificial feeding.

Since that time, many *Gouttes de lait* have been founded following this model, so that by 1906 there were 222 in the Pas de Calais alone, one among the eighty-six departments of France, and in this department, they have succeeded in reducing infant mortality in the neighborhood of 50 per cent. in the communities where they are located.

Nevertheless, as has been said by Mr. Jonnard, one of our former foreign ministers, at present governor general of Algeria, who wrote the preface of the book of Budin, only three things are necessary for the creation of a *consultation de nourrissons:*

1. A balance (a pair of scales).
2. A milk sterilizing apparatus.
3. The services of a physician.

The first two may be purchased, and the third, it is not necessary to tell you, may be found among my fellow countrymen who have so freely devoted themselves during the past four years to an attempt at safeguarding the liberty of the world.

There really exists one other factor indispensable to the efficient functioning of such an institution, namely, the visiting nurse, which important addition to social service is due to American initiative.

ORGANIZATIONS FOR IMPROVEMENT OF INFANT CARE

The Ligue contre la mortalité infantile[1] has equally encouraged the development or the creation of various organizations tending to promote maternal nursing and the progress of infant hygiene. The first of the *chambres d'allaitement* or "rooms for nursing" were established before the war in some of the larger factories, paricularly in the industrial regions of France at present occupied by the Germans. Since the beginning of the war these *chambres d'allaitement* have been rendered obligatory in the munitions factories and other institutions producing war materials, where women are employed.

In each factory, there are set aside one or more rooms, well aired and kept perfectly clean, with walls painted in white. The workwomen bring their children here in the morning and return at regular intervals of three hours during the day to nurse them. There is also added a room for the sterilization of milk, in case supplementary feeding is necessary. There can also be in addition, a restaurant where the mothers may receive without leaving the establishment a well-cooked and well-planned meal at a low price. For the older children, in such factories, there are installed separate rooms called, "garderies," with rest rooms, playrooms and dining room, where is given the diet appropriate to the child's age, at a price easily within the range of the mother's purse. Further, there are reserved rooms for the isolation of children in case they are ill, thus preventing the propagation of contagion.

In Paris and certain large cities of the provinces, there exist great numbers of charitable organizations directed toward the improvement of the condition of infants; for example, free restaurants for mothers, day nurseries for older children, temporary asylums in the town or country for the care of children during the confinement of their mothers.

Finally, I shall speak somewhat in detail of a very interesting institution called the Pouponnière at Versailles, organized for the benefit of a certain category of mothers in Paris. This institution receives the babies of mothers who because of physiologic or professional reasons cannot nurse their children and cannot afford to hire a wet-nurse. They can send their children, at a price much lower than would be required for a private nurse, to an institution established in the country under the best possible hygienic conditions, where the child is nursed by a woman who at the same time nurses her own child and also cares for another child of from 1 to 2 years of age. The children first entering the institution are submitted to a period of isolation to prevent the entrance of infectious diseases, and for the same reason other children may not visit the Pouponnière, and the mothers only under certain conditions.

The rôle of the visiting nurse will be to coordinate the interrelated actions of these various organizations. This is particularly possible because she comes in contact with the mother in her own home; she can direct her to the different *consultations de nourrissons, gouttes de lait* or dispensaries—then in the great field of "follow-up" work, she can coordinate the work of the societies tending to improve conditions of hygiene and of housing, both for the mother and for the child.

RESULTS OF THE WAR

Since the beginning of the war the problem of the protection of infancy has been much more difficult, and as a result of the war is now particularly urgent. In the first place, great numbers of physicians, those from 25 to 50, or even 55 years of age, have been mobilized. The natural result was a reduction in the number of clinics; this is particularly so because the younger physicians are the most familiar with the modern questions of public hygiene. Further than that, not considering that the war would be of long duration, most of the money formerly given those societies for the reduction of infant mortality was necessarily devoted to the various war requirements.

Finally, it should be noted that the birth rate since the beginning of the war has very markedly fallen, due partly to the great number of young married men who have been killed and a reduction in the number of marriages, and a falling off of the clientele of the dispensaries. There has also been, on the other hand, an increase in child mortality due to the rapid growth of the population of the large cities. This has been caused by the influx of workers to the munition factories, and of refugees, without adequate improvements in housing facilities.

Since 1916, the Ligue contre la mortalité infantile has been forced to crystallize all its efforts to combat this grave danger. This has resulted in the formation of a large number of societies destined to handle this immediate war problem. For example, in Paris, 14,000 liters of milk are distributed daily among the various children's hospitals, *consultations de nourrissons,* day nurseries, asylums for pregnant women, etc. Also, there have been opened in Paris, Lyons and other large cities new asylums for pregnant women, new day nurseries to care for the children of the women

1. For literature, please write to 49, Rue Miromesuil, Paris VIII^{e}, or to Dr. Paul Armand-Delille, 44 Avenue du Bois de Boulogne, Paris.

in the factories, and, as I have already mentioned, Albert Thomas, minister of munitions, has established in all the munition factories such an organization for the protection of women and children.

In order to furnish an efficient personnel for the foregoing noted organizations, there has been founded in Paris, under the auspices of the Ligue contre la mortalité infantile, a central school of puericulture. Lectures in puericulture have, however, been given for several years at the Foundation Pierre Budin, Hôpital des Enfants assistés, and in a special department of the Faculty of Paris under Dr. Marfan. I have myself, since 1906, given a course in puericulture in our nurses' training school of the city of Paris, and many others are given in the universities of the provinces.

At the moment, during 1917, when we found ourselves in particular difficulties along these lines in our reorganization of the fight against infant mortality, the American Red Cross arrived in France with its special department, the children's bureau (under the direction of Dr. William Palmer Lucas), to offer its aid. This offer was accepted by the whole of France with the deepest appreciation. That which has so appealed to us from the theoretical standpoint is your development of the visiting nurses, whose efficiency has been so clearly demonstrated in the United States. Of this I am particularly impressed, since I had the opportunity of seeing the visiting nurse organizations of New York, Philadelphia, Cleveland, etc.

After having responded to the most urgent appeals for aid incident to the war, as for example, at Toul, Nesle and Evian, the American Red Cross undertook, at Lyons, a work of a more general nature, in organizing an exposition of puericulture or, as is said here, an "infant welfare exhibit." This has had a most astonishing success. The American Red Cross has been able to group under its standard all of the best elements of the city, including religious, civil and political parties. As has been done by the French people against the Germans, it has made a "Union sacrée" in this great question of the protection of our children.

At the same time, there was inaugurated a course for visiting nurses, for which the number of applicants was soon greater than could be accommodated.

Soon the American Red Cross will transport this exhibit to other large cities of France (Marseilles, Bordeaux, etc.), where there already exist certain children's organizations and where the local committees have cordially offered their cooperation.

The director of public hygiene, M. Brisac, in the Ministry of Interior, is entirely disposed to second these efforts, and as he informed me just before I left on this mission to America, he would himself institute an investigation by his administration, in order to establish not only the list of existant organizations, but also the districts where the need is the most urgent. He assured me that the French government would cooperate with the American Red Cross in the perfection of its organization in the various departments, cities and communities.

We hope that soon, thanks to your aid, first the great cities, then each little village will have its *consultations de nourrissons* with their visiting nurses, so that all French mothers may have the aid and counsel which will permit them to save the generations of the France of the future.

By entering this war, you yourselves have demonstrated that you do not wish that the home of liberty and of the declaration of human rights should be overwhelmed by the waves of barbaric hordes. Instead, it is your evident desire, for which we wish to express our heartfelt gratitude, that after so much sacrifice, France may be reconstructed and its new generations, working with yours, continue their mission for humanity, in defending the right, the justice and the liberty of the world.

THE CHILDREN'S YEAR CAMPAIGN*

GRACE L. MEIGS, M.D.
WASHINGTON, D. C.

The Children's Year campaign in this country is, I believe, part of a great international movement for the protection of children in war time that is stirring all of the warring countries.

In part, this movement is the logical outcome of the years of effort and thought for children that lie between 1900 and the opening of the great war. In these years a realization had grown that of all the people in a country the children are the most important. And so there are many now who feel that in war time it is the children whose interests must be especially protected from the deprivations, dangers and difficulties brought about by the war. One of the ideals in this war for ideals is the determination that children shall not suffer too much for this war, and that the future for which our armies are fighting must bring better conditions for children than did the past.

This movement, however, has had another stimulus, especially in the foreign countries hardest pressed by the war. Every foreign warring country is losing lives for its future in two ways: by losses on the battlefield, and by the losses represented by the inevitable and enormous decline in its birth rate. And every country is realizing that there is just one way to make up at all for these losses, and that is by lowering the death rates for babies and children. The vast and preventable wastage of life represented by the infant mortality rate of a country is really the only point at which a great economy of life is possible, an economy at all in proportion to the loss of life from war.

This has been realized, and in every one of the warring countries, efforts are being made to cut down infant mortality rates and to increase greatly the work for the protection of mothers and babies that had been proved successful before the war. That work includes measures to insure the care of the baby by a healthy mother in her own home, and includes, further, the work of public health nurses or other trained workers, and of centers for maternal and infant welfare. The increase in this work in foreign countries has had to be carried out in the face of great difficulties—the same difficulties we are facing now in this country. The greatest of these has been the shortage of physicians and nurses; the second has been the diversion of popular interest from infant welfare work to other work which has a more dramatic appeal or a more apparent connection with winning the war.

THE WORK ACCOMPLISHED ABROAD

But in spite of these difficulties in the foreign countries, this movement for the protection of mothers and babies has been successful. Infant mortality rates in

* Read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

several of the countries have declined; in many countries more is now being done to care for women and children than ever before.

Reliable figures of infant death rates and birth rates are difficult to secure since the war began. Sir Bernard Mallet,[1] Registrar-General of England and Wales, has gathered together all the material available from official sources. He compares the fall in the number of births in England and Wales, Scotland, Ireland, Germany and Hungary. While the decrease in the number of births has been marked in all of the countries, it has been far less in the United Kingdom than in Germany and Hungary. In England and Wales, Scotland and Ireland in the succeeding quarters and years of the war, the percentage of decrease has varied from about 5 to about 30 per cent., but reached a point over 17 per cent. only in 1917. In Germany (in cities of over 15,000 inhabitants) and in Hungary, on the other hand, the percentage of decrease has been from 23 to 53 per cent., beginning the last quarter of 1914. The maximum point, 53 per cent., shows what an immense loss this represents.

Sir Bernard Mallet then compares the infant mortality rates of England and Wales, Scotland, Ireland and Germany for the years of the war ending in 1916, and shows that in general the rates in these countries have been lower than before the war. He says:

> We have thus the extraordinary phenomenon all but common to these countries that the rate of infant mortality during these years has been lower than at any previous period of like duration. In the three parts of the United Kingdom the rate for 1916 is the lowest recorded, while that for Germany was equaled in 1913 and beaten only in 1912.

Since this article was published, preliminary figures for 1917 for England and Wales have been published and show a rise of 6 points in the infant mortality rate. Newspaper accounts tell us that official figures for Berlin have shown an increase in the infant mortality rates in the last months of 1916 and the first six months of 1917. It is still too early to comment on the meaning of this rise.

It is, indeed, a very striking and remarkable achievement that the countries of the United Kingdom—England and Wales, Scotland and Ireland—should in the second full year of the war attain the lowest infant death rates on record. This result is not due to happy chance. Never before has so much been done for mothers and babies. It is evident from the reports that this work is considered of paramount importance; that while economy must be urged in other directions, none is tolerated in the development of this work. The government in England and Wales gives grants of money through the Local Government Board to local authorities and voluntary agencies carrying on child welfare work. The budget allowance for this grant was £140,000 in 1917-1918, and was increased to £230,000 for 1918-1919.

The number of health visitors—trained women giving instruction to mothers in their own homes on the care of themselves and their babies—was increased from 600 in March, 1914, to 1,445 in February, 1917; that is, it has been more than doubled. The number of centers was increased to 842 in February, 1917, and to more than 1,119 before the end of the year.

Of course, great difficulty has been met in developing the work because of the shortage of nurses. The great importance ascribed to the work has, however, evidently helped to meet this difficulty. It is said:

> The value of this national work is so fully realized that the War Office, in spite of the need of nurses for military service, is not prepared to accept those who are acting as midwives and health visitors.[2]

Last year, England held a national baby week, similar to that carried on in this country in 1916 and 1917. It is said that the popular interest aroused by this campaign helped a great deal in increasing the number of health visitors and infant welfare centers, and in bringing home to the whole country the importance of saving mothers and babies as a war measure.

Perhaps the most important measures of all—those economic measures whose aim is to enable a mother to remain in her own home and care for her baby herself instead of going into industry—I shall not touch on here; nor can I speak of the work that is being carried out to give special preference in the milk and food supplies to mothers, babies and children.

I have sketched this work in England and Wales because it is illustrative of the work that has been going on in many other foreign countries since war was declared.

THE CAMPAIGN IN THIS COUNTRY

The work abroad has been an inspiration for the Children's Year Campaign in this country, which has been planned and is being carried out by the United States Children's Bureau cooperating with the Child Welfare Department of the Woman's Committee of the Council of National Defense. In this campaign the Child Welfare Committee and Committee on Nursing of the General Medical Board of the Council, as well as state and city departments of health, and physicians and nurses all over the country, are cooperating.

This campaign began April 6, the anniversary of the declaration of war, and is to last throughout the second year of the war.

In this country, because of our incomplete vital statistics, we do not know for the whole country the birth rate and infant mortality rate. But we estimate that every year in this country 300,000 children under 5 years of age die. It is safe to say, all agree, that one half of these deaths are preventable. The published aim of the Children's Year Campaign is to save the lives of 100,000 children under 5 during this year, the second of the war.

This aim—the public protection of mothers and young children—is only part of the program of the campaign, which is fivefold. The other four aims are: to maintain the standard of home care and the income on which proper care of children depends; to see that the restrictions on child labor and the requirements of school attendance laws are not broken down under war time pressure; to insure to every child opportunities for the outdoor life and recreation which are essential to health, and to provide for children in need of special care—the dependent, the neglected, the delinquent, the subnormal—the care that they require. I shall have space here to tell only of the first part of the program—the protection of maternity and infancy.

The aim of this part of the campaign is to save 100,000 lives this year. How can it be done? We

1. Mallet, Bernard: Vital Statistics as Affected by the War, Jour. Roy. Statistical Soc., 1918, **81**, 1.

2. Hughes, A.: War and the Public Health Nurse, Pub. Health Nurse Quart. 1918, **10**, 210.

have thought that to accomplish it two things are necessary:

First, to enlist the interest and gain the help so far as possible of every one in the country; of fathers and mothers, of physicians and nurses, of health officers—of every one; to develop the general conviction, here as it has been developed abroad, that the protection of children is a war measure.

Second, the development of permanent work for children, especially divisions of child hygiene in state and local departments of health; of centers for infant and maternal welfare, and of the work of public health nurses.

In a democratic country, progress must depend on popular understanding and support. And so in this campaign the Children's Bureau has enlisted the help of the many millions of women represented by the Woman's Committee of the Council of National Defense. In almost every county in this country a committee has now been formed; and under most state and county committees a child welfare committee has been established. These committees have been asked to take up the work of the Children's Year. The Children's Bureau and the Child Welfare Department of the Woman's Committee have asked all local committees to seek the advice of state and local departments of health and of local medical associations in making their plans. To every state, on the basis of its population, has been assigned its quota of children's lives to be saved, and in at least one of the states (Ohio) the state quota has been divided up between the counties and cities. We have heard of one small community whose quota of lives to save was seven, and which intends to save them.

You will wish to know in what ways we are trying to accomplish our two aims—to arouse popular interest and to stimulate the development of permanent work.

THE WEIGHING AND MEASURING TEST

The weighing and measuring test for children under school age is the plan which has been adopted to fix public opinion on the subject of the health of children, and to show the need for better provision for keeping children well—the need of more public health nurses and of more centers for infant and maternal welfare. I may explain the weighing and measuring test briefly as a test in which as many as possible of the children under 6 of a community are weighed and measured, and these measurements compared with a table of average heights and weights at different ages. It is advised that where possible a full physical examination of each child by a physician shall be included. The attention of parents is called to children whose weight falls markedly below the average for their height. The Children's Bureau has furnished a card for recording the height and weight of each child. Half this card is detached and given to the parents to serve as a permanent record; half is returned to the Children's Bureau. The cards where measurements have been made by physicians are to be tabulated. It is hoped that two or three hundred thousand cards will be available for tabulation; this will give data never before obtainable for a table of average heights and weights of children under school age.

The reports of the campaign in many communities are now coming in to the Woman's Committee and the Children's Bureau. They indicate a widespread interest and enthusiasm. Many of the committees are reporting especially the interest shown in the test by the local physicians, and the way in which physicians are cooperating in carrying out the test in spite of the fact that their work is so much increased because of war conditions. The part taken in the campaign by state and local departments of health is a marked feature of the reports.

The weighing and measuring test has not yet sunk sufficiently into the past to let us judge what its end-results for good will be. But as a means of fixing popular attention, as a great publicity and educational campaign, I think most communities agree that it has been a success. The demand for cards for the test has gone far beyond our expectations; 5,000,000 cards have been printed and distributed. A campaign in which 5,000,000 families and many thousands of communities have taken part is one which is talked of and thought about. To most of these families we hope the idea has been brought home that the United States government considers that the special care of children in war time is a patriotic duty.

From New Orleans it is reported that a house-to-house canvass showed that there were about 40,000 children under school age. Of these, 32,730 have been weighed and measured. From Boston it is reported that about 35,000 children have been included in the test.

The test has been criticized because of its crudity. It is said that the height and weight alone are only an extremely rough index of the child's health and nutrition. This is true. It would be far better if every child could have been given a complete physical examination by a physician. But this would have been an impossibility on account of the shortage of physicians.

It is, however, true that the height and weight do give a rough indication of the child's physical condition. Many children who are very markedly underweight for their age and height are being found; there is the evidence of a children's clinic in a large city that the number of cases of rickets and malnutrition had doubled during the last month because of the children brought in by their parents who had discovered their condition through the weighing and measuring test.

THE FINAL AIM

To point out to their parents and to the community the children needing special care is one of the aims of the weighing and measuring test. But the thing which we hope, above all else, to accomplish is the development of permanent work for maternal and infant welfare. After the test, each community—as has been the case in Boston—will, we hope, have seen the need for more centers and more public health nurses, and will feel that the establishment of this work is a war measure. There is evidence that this is happening—that this work is having a great stimulus. We hope by the end of the year that the number of divisions of child hygiene, of infant welfare centers and of public health nurses will be doubled.

Of course, here the campaign comes up squarely against the difficulty that is affecting infant welfare work abroad and that is affecting all public health work in this country. This difficulty is the great shortage of physicians and nurses. The question of the shortage of physicians I shall not take up at all; perhaps it will be spoken of in the discussion. The shortage of those skilled in pediatrics is one of the

gravest problems at present in infant welfare work. This shortage makes an increase in the number of public health nurses for preventive infant welfare work all the more an urgent necessity.

The National Organization for Public Health Nursing and the Committee on Nursing of the Council of National Defense are working in close cooperation with the Children's Year Campaign. The first named organization was appealed to by a conference of state child welfare chairmen to devise means of increasing the supply of nurses, and it has approved a plan for cooperating with states in which funds have been raised to employ a state supervisor of nurses either by the state department of health or by the state child welfare committee. The organization will help states to find suitable candidates for these positions, and through a traveling secretary will aid the state supervisor in developing emergency plans for training graduate nurses to do public health and infant welfare work. Already the child welfare committee of one state—Connecticut—has raised funds for this purpose; and others are making plans to do so.

In many of the states and in many cities much work for children as a war measure was being planned or carried on before the opening of the Children's Year Campaign. I wish there were space to tell of the splendid work that has been done. We hope that the general interest aroused by the campaign has aided the work already begun in those states and cities.

All these lines of endeavor in our country and abroad, this whole movement for the conservation of children in war time which we are discussing today, will grow as the years go on. Some day, when the war is over, this movement for the protection of children, like that for the control of venereal diseases, will, I think, be considered among the important lines of progress that have developed from the great war.

This article and those by Drs. L. R. DeBuys and Paul Armand-Delille are part of a symposium on "Child Welfare." The remaining papers, by Drs. J. P. Sedgwick and N. O. Pearce, and by Dr. W. P. Lucas, with the discussion, will appear next week.

Progress in Child Labor Legislation.—The *Child Labor Bulletin* for May has as a special feature the tentative draft of a bill to create a federal Department of Education, to provide for a Secretary of Education and to secure the appropriation of $100,000,000 for federal aid to the states. Drafted by the National Education Association and the National Child Labor Committee in cooperation with educators throughout the country, the measure has for its aims the abolition of illiteracy, the improvement of rural schools, the Americanization of immigrants, and the promotion of physical education in the schools. The *Bulletin* also reviews the gains of child labor legislation during the past year, naming New York, Massachusetts, Wisconsin and Missouri as the banner states for progressive law-making. Within that period, Virginia and Mississippi have raised their educational standards, the former extending her law to apply to the whole state and the latter passing a local option educational bill applying to children between the ages of 7 and 16 years. In addition to the state survey made in Oklahoma by the National Child Labor Committee, three more state surveys are now under way in Michigan, North Carolina and Alabama, for the purpose of studying and reporting on all the conditions affecting child life. The *Bulletin* declares that these surveys have become a part of the campaign of education which accompanies the drafting of children's codes in the various states. The survey in Alabama is especially designed to furnish information for the legislature.

POTENCY OF ANTIMENINGOCOCCIC SERUM

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During the past year there has been much discussion of the therapeutic value of the antimeningococcic serum available in the American market, and of its potency as determined by laboratory tests. While the question of the potency of this agent is still under investigation and is far from being settled, it appears desirable to present this brief review of the situation as it exists at present.

Epidemics of cerebrospinal meningitis occurring in 1915 and 1916, in England and continental Europe, with the mobilization of troops, afforded an opportunity to extend the therapeutic use of antimeningococcic serum, and to analyze the results of treatment with better controls than is usual.

The conclusions reached as to the efficacy of the serum treatment were conflicting. Some workers had most unsatisfactory results, while others working with serum of similar origin were apparently enabled to reduce, to a conspicuous degree, the mortality of the disease.

The failures were in part attributed to the presence in the epidemic of strains of the infecting organisms that were resistant to the serum, or, in other words, that the different serologic responses of the meningococcus were to be considered in serum therapy.

It is pertinent, therefore, to present briefly a few facts in relation to the classification of the organisms isolated from the cerebrospinal fluids of persons suffering from epidemic meningitis.

GROUPS OF MENINGOCOCCI

The first definite separation in groups of the organisms under discussion was made by Dopter, who found that by serologic methods it was possible to differentiate two groups, the true meningococci and a group which he designated parameningococci.

It has been very generally accepted that this separation is valid, but certain workers consider this grouping not sufficiently specific. Further investigation along these lines has led to the recognition by one set of workers of the "irregular" group, which includes organisms that vary from the serologic types which form the basis of the two groups mentioned. Others, working with the cultures secured from cases of meningitis that occurred among troops in England, established four types designated I, II, III and IV, I and III corresponding in general to the regular meningococci and II and IV to the parameningococci.

The group classification of a particular organism is made either by means of agglutination or by means of agglutinin absorption, but the results of the two tests do not necessarily run parallel. The separation of cultures into groups probably is a matter of the greatest importance in connection with the testing of the therapeutic potency of the serum. It should be said that ordinarily there is some "cross immunity" shown

by members of the several groups; that is, while a culture falls into a certain group as indicated by reacting with high dilutions of the group type serum, it will react with relatively low dilutions of the antiserum prepared from type strains of other groups.

Unfortunately we are not yet in position to accept finally any grouping that has been proposed, but tentatively, and for the purpose of testing the serum, it seems wise to recognize the largest number of groups which seem to have a reasonably substantial basis.

Some workers, having accepted the classification of four groups, have produced therapeutic serums specific against a single group of the organisms. In view of the delay attending the group classification of the organism that may be cultivated from a case, under ordinary conditions, and the uncertainty as to the validity of such classification, it is questionable whether the use of such narrowly specific serums is desirable. Probably it is better for the present to follow the generally adopted procedure of furnishing a polyvalent serum representative of all recognized groups of the organism.

PROTOCOL 1.—AGGLUTINATION TEST*

Strains	H. L. 98					H. L. 55					H. L. 56					H. L. 57					H. L. 106					H. L. 60				
Dilutions	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800
Serum A	4	4	4	3	2	4	4	4	3	2	4	4	4	3	2	4	4	4	4	2	4	4	3	1	0	4	4	3	2	1
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	4	4	3	1	0	4	3	2	1	0	3	3	2	1	0	4	4	4	2	0	4	4	2	0	0	3	3	2	1	0
D	4	4	4	2	0	4	3	2	2	1	3	3	1	0	0	4	4	4	2	0	4	4	3	2	1	4	4	2	1	0
E	4	4	3	2	0	4	3	2	2	0	4	3	1	0	0	4	4	4	2	0	4	4	3	2	1	4	3	1	0	0
F	4	4	3	1	0	3	3	2	1	0	3	2	1	1	0	4	4	4	2	0	4	4	3	1	0	3	3	2	0	0
1	4	4	4	3	2	4	4	3	3	2	4	4	3	2	0	4	4	4	3	2	4	4	3	2	0	4	4	2	1	0
2	4	4	4	2	0	4	4	3	2	1	4	3	3	2	1	4	4	2	1	0	4	3	2	1	0	4	4	2	1	0
3	4	4	4	3	2	4	4	4	3	2	4	4	4	3	3	4	4	4	3	2	4	4	4	2	1	4	4	4	3	2

* In the protocols:
4 = complete agglutination with sedimentation and clear supernatant fluid.
3 = strong agglutination with sedimentation and faint clouding of the supernatant fluid.
2 = partial agglutination with slight sedimentation and cloudy supernatant fluid.
1 = slight agglutination with occasional flocculent clumps suspended or precipitated.
0 = no agglutination with homogeneous cloudy supernatant fluid and no flocculent precipitation.
Strong agglutination is credited as satisfactory.
4 = complete fixation or no hemolysis.
3 = strong fixation or a faint tinge to the supernatant fluid.
2 = definite fixation or slight hemolysis with a precipitate of blood cells.
1 = slight fixation or hemolysis with a slight residue of blood cells.
0 = no fixation or complete hemolysis.
Definite fixation is credited as satisfactory.
Lettered serums A, C, D, E, F represent those of producers not engaged in the interstate sale of this product. Numbered serums 1, 2, 3 represent different lots of the several producers who are engaged in the interstate sale of the product. The letter A uniformly refers to the check serum, the letter B to normal horse serum. The numbers refer to different serums in each protocol.

PROTOCOL 2.—AGGLUTINATION AND COMPLEMENT FIXATION TESTS

Agglutination Test

Strains	H. L. 98					H. L. 55					H. L. 56					H. L. 57					H. L. 106					H. L. 60				
Dilutions	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800
Serum A	4	4	4	3	2	4	4	3	3	2	4	4	3	3	2	4	4	4	3	2	4	4	3	2	1	4	3	3	2	1
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	4	4	4	4	4	4	4	4	3	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	3

Complement Fixation Test

Groups	I					II					III					IV				
Strains	H. L. 98					H. L. 55 and 56					H. L. 57 and 106					H. L. 60				
Dilutions	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000
Serum A	4	4	3	2	0	4	4	3	3	1	4	4	3	1	0	4	4	3	1	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	4	4	3	3	4	4	4	3	3	4	4	4	3	1	4	4	4	4	3

METHODS OF TESTING

A number of methods of testing antimeningococcic serum have been employed, but none has won general acceptance. Thus American manufacturers have been accustomed to use the complement fixation method, the agglutination method, the determination of the opsonins or bacteriotropins, or the animal protection test. The English workers have used chiefly the agglutination method, the French prefer the complement fixation method, while according to the latest available literature, the Germans use both the complement fixation test and the determination of the bacteriotropin content of the serum.

Unfortunately there is no satisfactory evidence as to the correlation of the results of any of these methods of testing with the results of the therapeutic application of the serum to the disease in man.

The animal protection test is rather attractive because it seems to produce conditions that are analogous to those under which the serum is used in the treatment of the disease; but our lack of knowledge of the mechanism of infection and protection in man, and of the virulence of cultures for laboratory animals, does not permit the adoption of this test without further study. In other words, it may be quite possible that the protective action of the serum in animals and the curative action in man do not run parallel. Therefore it seemed wise, tentatively, to adopt test tube experiments to determine the activity of the serum used in the United States.

With the application of these serologic tests to the commercial serums, such wide variations in results were found that it seemed clear that the various

methods of applying these tests might with profit be replaced by those which would lead to the production of a more uniform preparation. Even with the use of the same test, the readings made by different persons on a given specimen varied considerably. It is scarcely an exaggeration to say that the various reagents used in the tests may be varied in concentration and quantity so as to show almost any result; thus we have a serum sent out for test purposes by a state department of health, which was stated to agglutinate in a dilution of at least 1:800 a given culture, but in our hands showed strong agglutination in but 1:100 with the same strain (Serum C, Protocol 1). These facts made it necessary to have all serums offered for sale in interstate traffic tested in a central laboratory, and a recommendation to this effect was approved by the proper administrative authorities.

It was determined at the outset that it probably would be wise to accept as suitable for therapeutic purposes any serum which passed satisfactorily either by an agglutination or a complement fixation test. This seemed desirable as certain American and English workers favored the former, believing that it was an index of the value of the serum, while the latter was preferred by other Americans and by French workers.

The choice of the strains for the preparation of antigens to be used in these methods is complicated by the differences of opinion on the grouping of meningococci, as well as by the readiness with which the strains lend themselves to cultivation, and to the above mentioned reactions. After some experimentation it was finally decided that the tests should be made with one or more representative organisms of American origin of each of four groups determined by agglutinin absorption methods. It was found that these embraced representative cultures which would be classified in the three groups: the regular or normal meningococci, the parameningococci, and the irregular organisms.

The antigens for both agglutination and complement fixation tests were prepared essentially by the methods employed by Lieutenant-Colonel Gordon of the English Royal Army Medical Corps, and his associates. These were distributed to commercial manufacturers, together with detailed descriptions of the use of these reagents and the method of reading the results obtained. It was required that the manufacturers should test this serum using these or similarly prepared antigens, but that the serum should not be released until samples had been tested and passed at the Hygienic Laboratory.

All lots of serums have been tested in comparison with one (Serum A in the protocols) which gave moderately high titer, by the above-mentioned methods, and were regarded as satisfactory if they showed an agglutination or complement fixation titer slightly less than, equal to or greater than the check serum used (Protocols 2 and 3).

There have been examined since Dec. 1, 1917, 101 lots of serum, representing in each lot from four to

PROTOCOL 3.—AGGLUTINATION AND COMPLEMENT FIXATION TESTS

Agglutination Test

Strains	H. L. 98					H. L. 55					H. L. 56					H. L. 57					H. L. 106					H. L. 60				
Dilutions	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800
Serum A	4	4	4	2	0	4	4	3	2	1	4	4	3	1	0	4	4	4	3	0	4	4	4	1	0	4	4	3	2	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	4	4	3	3	4	4	4	3	2	4	4	4	3	2	4	4	4	3	2	4	4	4	3	2	4	4	3	3	2
2	4	4	4	3	3	4	4	4	3	3	4	4	4	3	2	4	4	4	4	1	4	4	4	2	1	4	4	4	4	1

Complement Fixation Test

Groups	I					II					III					IV				
Strains	H. L. 98					H. L. 55 and 56					H. L. 57 and 106					H. L. 60				
Dilutions	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000
Serum A	4	4	4	3	1	4	4	4	4	3	4	4	4	3	0	4	4	4	3	2
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	4	4	3	0	4	4	4	4	3	4	4	4	3	0	4	4	4	4	3
2	4	4	4	3	1	4	4	4	4	4	4	4	4	3	0	4	4	4	4	3

PROTOCOL 4.—LACK OF CORRELATION BETWEEN AGGLUTINATION AND COMPLEMENT FIXATION TESTS

Agglutination Test

Strains	H. L. 98					H. L. 55					H. L. 56					H. L. 57					H. L. 106					H. L. 60				
Dilutions	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800	1:50	:100	:200	:400	:800
Serum A	4	4	4	3	2	4	4	3	2	2	4	4	3	3	2	4	4	4	4	3	4	4	3	2	1	4	4	3	3	2
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	4	3	3	2	4	4	3	3	2	4	4	4	3	2	4	4	4	2	1	4	4	3	2	1	4	3	3	2	1
2	4	4	4	4	3	4	4	3	2	1	4	4	3	3	1	4	4	4	3	1	4	4	3	2	0	4	4	3	2	0

Complement Fixation Test

Groups	I					II					III					IV				
Strains	H. L. 98					H. L. 55 and 56					H. L. 57 and 106					H. L. 60				
Dilutions	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000	1:250	:500	:1000	:2000	:5000
Serum A	4	4	3	0	0	4	4	3	2	0	4	3	2	0	0	4	3	2	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	3	1	0	0	0	4	3	2	0	0	1	0	0	0	0	4	3	1	0	0
2	4	0	0	0	0	4	3	2	0	0	1	0	0	0	0	4	3	1	0	0

more than 100 liters. Of these, twenty-five failed to meet the requirements. Of the twenty-five, nine were produced in the early months of 1917 before the application of the present methods by the Hygienic Laboratory, and six were produced by an institution which does not have a license to engage in interstate traffic, but submitted samples for check testing. Hence, of the lots produced subsequent to this date, 12 per cent. of those submitted by producers offering serum for interstate sale failed to pass.

Comparisons made on eighty or more tests have shown that complement fixation titer usually has a correlation with agglutination titer. However, in individual lots there are distinct deviations from this correlation, as are shown in Protocol 4.

All American serums now on the market are polyvalent serums, and are made by immunizing the horses with from thirty to eighty different strains of meningococci, most of which have been isolated from individuals in this country.

Different lots of serums even from the same manufacturer may vary in titer on different strains of the same and different serologic groups, both in agglutination and complement fixation reactions.

Further, the same lot of serum may show different titers on different antigens made from the same strains, and even on the same antigen. The latter variation is, however, within a comparatively short range.

It has been determined that producers can obtain results comparable with those of the Hygienic Laboratory, when using the methods of testing specified by this institution.

CONCLUSIONS

By the tests, thus far devised, it is possible only to determine definitely that the serum examined is derived from a horse which has been immunized with strains of meningococci representative of the various serologic groups occurring in this country.

All antimeningococcic serums now offered for sale in interstate traffic are required to show this property before release from the plant of the manufacturer.

Feeblemindedness Discussed at National Conference.—At the meeting of the National Conference on Social Work at Kansas City, May 16, George A. Hastings, executive secretary of the Committee on Mental Hygiene of the New York State Charities Aid Association, in discussing the pressing problem of feeblemindedness said that while no census of these defectives had ever been taken in this country, there are probably 400,000 of them, or one for every 250 of the population. In New York State alone there are about 35,000, of whom only about one-sixth are in proper institutions. About 15,000 men have been rejected from the new National Army on account of nervous and mental disorders, and of these, one-third, or about 4,000, were rejected on account of feeblemindedness. The proper place to detect feeblemindedness, he said, is in the schools, and in dealing with the problem, five definite steps are necessary—identification, registration, instruction, supervision and segregation. A practical working program should include an awakened public knowledge and conscience concerning feeblemindedness, a realization of state responsibility and a definite policy, on the part of the state, facilities in the community for the earlier discovery of cases, central registration, the establishment of institutions and schools for segregation and training, facilities in the courts for determining the mental condition of prisoners, establishment of more ungraded classes in public schools, a system of community supervision, and continued scientific study of the whole problem.

RATIONALE OF TREATMENT OF TOXIC AND INFECTION PSYCHOSES*

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The clinical interpretation of toxic and exhaustion psychoses rests, primarily, on psychobiologic principles. Of these principles, the modern physiologic concept that living things are transformers, rather than generators of matter and energy, gives us understanding of the term "mechanism" when applied in conservation of energy, on which concept treatment must be founded. The neural mechanisms with their baffling complexities, their problems of functioning, their clinical interpretations, etc., all require familiarity with the physiology of nervous reactions and afford the most inviting field for the research worker today, especially when in this great world's war, the clinical problems in this special field are overwhelming both in intricacy and in numbers.

We must, in our approach to the understanding of these problems, keep in mind the three essential points of Sherrington,[1] as regards nervous reactions, namely, first, the natural history of cell life; second, the conduction of the nervous impulse more recently studied by Lucas,[2] and third, the integrative nervous reactions, in virtue of which the nervous system unifies functional activities. It is not necessary to dwell on these fundamentals as essentials in the biologic foundation for a psychologic doctrine of the mental life of an individual.

As practitioners, we all recognize the essential value of these principles on which mental mechanisms have their foundation. It is said by Dunlap[3] of Johns Hopkins University that psychologists who have recognized the value of physiology have confined their attention almost exclusively to neurology. This neurology has been of little use to the psychologist, except as a terminologic scheme. The pressing need in psychophysiology is the study of muscle and gland, and only through the study of these tissues in their structural and functional relation to nervous tissue, can neurology be made psychologically valuable. Sherrington,[1] concluding his valuable epoch-marking work, strongly emphasizes the biologic point of view, for the research student, the clinician and all others concerned, in giving explanation of neural mechanisms, as a whole, the purposes of which are dominance and advantage over the environment of the individual. He says:

> The dominance over environment is a necessity and each individual must be adequately adjusted for this purpose.
>
> To a certain extent, this adequacy is a native endowment, transmitted, but with each advancing conflict with evolution of environment, readjustments are necessary. Only by continual modification of its ancestral powers to suit the present, can it fulfill that which its destiny, if it is to succeed, requires

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Sherrington, Charles G.: The Integrative Action of the Nervous System, New Haven, Yale University Press, 1911.
2. Lucas, Keith: The Conduction of the Nervous Impulse, London, 1917.
3. Dunlap, Knight: An Outline of Psychobiology, Baltimore, Johns Hopkins University Press, 1914.

from it as its life's purpose, namely, the extension if its dominance over its environment.

For this conquest, its cerebrum is its best weapon. It is then around the cerebrum, its physiologic and psychologic attributes, that the main interest of biology must ultimately turn.

Modern biologic thought and research have contributed valuable knowledge to an understanding of these mechanisms, notably the work of Loeb,[4] who implies that the mechanisms of the instincts are reducible to laws which are as valid as the laws of physics; that even the indefinite term, environment, when considered in its individual physical and chemical forces which constitue environment have simple physicochemical laws; that in heredity, with its perplexing problems, we do not need to depend on the assumption of the heredity of acquired characters, but that physiologic chemistry is adequate for this purpose.

Crile,[5] in his kinetic theory, essentially a biologic consideration of man as an adaptive mechanism, proves conclusively that every reaction by which life is manifested in the organism and adaptation to environment secured, is the result of the transformation of energy in the organism.

The special system of organs which transforms potential into kinetic energy for the principal reactions of the body, Crile calls the kinetic system. This system is a part of the great scheme of conservation of energy in the living animal. It works harmoniously under normal conditions with the other recognized systems of the body, namely, digestive (which appropriates energy in the form of food from the environment), the respiratory (through which system oxygen is taken to and carbon dioxid from the blood), the circulatory system (which system transmits matter in the form of food to cells of the body and removes waste), the urinary system (also a remover of waste material), and the genital system (as a procreative system for the purpose of preservation of the species). Each of these systems performs a specific function and, in so doing, transforms potential into kinetic energy within the confines of special needs, but none for special essential adaptive needs.

The essential adaptive needs act, primarily, to transform potential into kinetic energy for the purpose of heat and motion. The principal organs in this system are the brain, the thyroid, the suprarenals, the liver, and the muscles. The functions of these organs, we all know, and also that they are material adjuncts in the processes of all other systems.

Crile postulates that the mechanism which transforms potential energy into kinetic energy to produce muscular action is the brain-muscular apparatus, assisted by the activating and accelerating organs, the thyroid and the suprarenals. Further, that this mechanism which produces muscular action and emotion is the same as the mechanism which generates heat, maintains consciousness, and causes the splitting up of foreign proteins by which the chemical purity of the body is maintained. Crile's theory has not been fully accepted by physiologists, but to the clinician, dealing practically with problems in which these mechanisms are involved, notably in exhaustion states, it offers a rational explanation for the clinical pathology with which we are confronted.

4. Loeb, Jaques: The Organism as a Whole, New York, 1916.
5. Crile, George W.: Man as an Adaptive Mechanism, New York, 1916.

Crile's experience, in endeavoring to have his theory accepted, is not unlike that of Darwin with his theory of the origin of the species, which created such divergent views among biologists. And, as it was said of Darwin, so it may be said of Crile, "whether his views on the modus operandi of his theory receive further confirmation in the future, or whether they are materially modified, in no way affects the truth of the statement that, in employing his activities in adding to natural science, he has revolutionized the world of thought."

Crile's contribution to natural science have given us the most rational explanation of the mechanisms of exhaustion. Cannon,[6] Fraser,[7] Porter,[8] Cowell,[9] Bayliss,[10] Sherrington and others, grasping the opportunity of the greatest war in history, have contributed valuable clinical research studies to these mechanisms, which are leading to, and assisting in, the standardization of the rationale of treatment.

We have all met cases in hospital practice, which in their delineation have passed through the varied stages of exhaustion produced by overstimulation, from the outer and inner environments of the body, and as we have observed their progress either to dissolution or to recovery, we have sought explanation of the mechanisms.

Our own observations and experience justify the acceptance of Crile's[5] kinetic theory which "postulates that there is in the body a kinetic system, consisting mainly of certain organs, which is driven by the stimuli of the outer and inner environment of the body" and that the body is a mechanism integrated and driven by the brain in response to adequate stimuli — contact, distance and chemical — arising within and without the body. Both the phenomena of health and disease are explainable on the basis of this theory.

Under normal conditions, the balance of "wear and tear" is maintained. But, as Weir Mitchell[11] taught us years ago, overfatigue, brought about by excessive activity without adequate balance, will cause exhaustion of a greater or less degree. It is, therefore, the kinetic system driven, as Crile[5] says, "at an overwhelming speed by such activations as severe physical injury, intense emotional excitation, perforation of the intestine, the pointing of an abscess into new territory, the sudden onset of acute infectious disease, such as cholera, an overdose of strychnin, a Marathon race, a grilling fight (such as our soldiers are today encountering), foreign proteins, or anaphylaxis, that there results a condition of acute exhaustion, clinically recognized as shock, and designated, according to its precipitated cause—traumatic shock, psychic shock, toxic shock, infection shock, anaphylactic shock, drug shock, etc. Whatever the cause of the shock, the essential pathology of shock is identical, as is the immediate clinical picture and the subsequent slow, halting recovery of strength and function."

In mental disorders, accompanied by the phenomena of exhaustion, we not infrequently encounter a slow,

6. Cannon, Walter B.: A Consideration of the Nature of Wound Shock, The Journal A. M. A., March 2, 1918, p. 611; Acidosis in Cases of Shock, Hemorrhage and Gas Infection, The Journal A. M. A., Feb. 23, 1918, p. 531.
7. Fraser and Cowell: Clinical Study of Blood Pressure in Wound Condition, The Journal A. M. A., Feb. 23, 1918, p. 520.
8. Porter, W. T.: Boston Med. and Surg. Jour., May 16, 1918.
9. Cowell, E. M.: The Initiation of Wound Shock, The Journal A. M. A., March 2, 1918, p. 607.
10. Bayliss, W. M.: Proc. Roy Soc., 1916.
11. Mitchell, S. Weir: Fat and Blood, Philadelphia, 1911.

enervating process such as worry, anxiety, with or without a background of physical disorder, such as nephritis, diabetes, exophthalmic goiter, cardiovascular disorder, and other conditions of essentially chronic type, in which cases a prolonged activation of the kinetic system occurs with resulting slow, but progressive exhaustion. In these cases, we are more apt to find as a complication the toxic-infection psychoses.

The clinical pathology in these cases is essentially the same as in the more acute cases, the difference being in the degree of the time element. The clinical history will show the gradual unbalancing of neural mechanisms where energy transformation is lessened and sooner or later the whole kinetic chain, beginning with the brain and extending to the muscular system, with collateral involvement of the glandular and other systems, until finally all of the mechanisms are out of harmony, inadequate in functioning, with gradual structural changes which ultimately overwhelm and produce dissolution of the individual.

To follow closely the mechanisms of exhaustion, it is necessary, in order to more fully understand what Dunlap said regarding the pressing need of psychobiology, "the study of muscle and gland," that we follow the functioning of the autonomic nervous mechanisms and the associated endocritic glandular activities in the light of modern clinical medicine.

Of creative interest to the clinician is the study of the emotions—their physical basis, their psychology—with their possibilities for good or ill to the individual.

In the realms of clinical psychology as applied to psychiatry, we have the wide field of opportunity to see, study and treat cases, which present in their ensemble the whole gamut of clinical symptoms. Especially marked are the evidences of conflict—the striving for adaptation to, and dominance over, the environment.

Again, let me repeat Sherrington's saying that "dominance over environment is a necessity." This fact really is the basic principle of the new psychiatry so far as psychologic factors are concerned. These conflicts are especially marked at the psychologic level, which are explained by White[12] as follows:

> In general, the difficulties at the psychologic level arise because of inability to deal effectively with reality, and in being forced back from an effective adjustment to reality, the individual is pushed backward to earlier instinctive levels of activity which are more familiar, to regions in which he feels a greater sense of security. Inasmuch as the psychologic integrations are made possible only because of physiologic integrations, which have preceded them in the course of evolution and development, it must happen that, if the push back from reality is very great and long continued, that those lower, bodily types of integrative must often suffer.

The mental conflict is outwardly expressed by disturbances of bodily function. Psychologic conflict is converted into bodily disorder.

The bodily disorder we know may and does not infrequently take on the mechanism of hysteria in the psychoneuroses, while in the psychoses by reason of more or less excessive chronic emotional activation in the conflict, we have definite and demonstrable disorders, involving the autonomic neural mechanisms leading to exhaustion.

In deeply intrenched emotional experiences, occurring in individuals of the neurotic constitution type, with lowered bodily resistance to toxic and infectious disorders, we have decided nutritional, metabolic bodily disorders. Doubtless you all have met, ere this, and will meet more hereafter, the patients suffering from the stress, unrest and anxiety of the war conditions, which cases give marked evidences of failure to find adjustments to circumstance and environment, and in their flight from reality to the safety zone, have mental perturbations within the zone of the psychoses or on the borderline. Each individual reacts according to his own limitations, but whatever the cause of starting the kinetic drive to safety, the mechanism is the same in all cases.

At whatever the level maladjustments occur, we will find characteristic symptoms and a definite clinical pathology. The symptoms which first attract attention may appear at the instinctive level or the social-psychologic level, both of which are evidenced in conduct; then to retreat to chemicopsychologic level as shown in the metabolic disorders, and the end-results in terminal acidosis. Most of our clinical problems arise within the domain of the metabolic changes leading up to the terminal results of exhaustion.

The psychologic factors are well understood and the principles of clinical pathology more or less definite in the toxic infection psychoses; yet the principles of therapeutics are more or less under theoretical discussion in the endeavor of modern medicine to secure stability in its practice.

Theoretical discussions of today are founded on research, experimentation and observation. The divergence between intensive research workers, such as Cannon,[6] Crile[5] and Porter,[8] in the field of shock, which phenomenon is within the scope of the clinical pathology of exhaustion, as seen in the toxic-infection psychoses, is the friendly competition for truth, which we all welcome because it will lead to precision in our therapeutics. These eminent physiologists more or less mechanistic in their conceptions, have contributed valuable knowledge to our understanding of the relationship of physiology to medicine. The great opportunities of the world's war of today has given to these researchers the chance to know what health really means and what disorder really means, when bodily conflicts ensue under extraordinary and very varying conditions of environment.

Haldane[13] says:

> If we look on pathology as simply the description of damage to bodily structure, and the analysis of the causes of this damage, then pathology may be very helpful to preventive medicine, but does not help much in therapeutics. When, however, pathology studies the processes of adaptation to the unusual, defense of the organism against the unusual, and reproduction of the normal, just as the new physiology studies the maintenance of the normal under ordinary conditions, then therapeutics and surgery will be aided at every step by pathology, and a rational biological pharmacology will have its chance.

Modern therapeutics in psychiatry is profiting by the progress in the new physiology and clinical pathology. The disentanglements from old formulas, from the narrow empiricism from fanciful theories, etc., and the substituion of facts from physiology, chemistry, pathology, psychology, physics and allied sciences, has given us scientific therapeutics, with reasonable doctrines, which rational practice sustains in practical results.

12. White, W. A.: Principles of Mental Hygiene, New York, 1917.

13. Haldane, J. S.: Harvey Society Lectures, 1916-1917, p. 40.

In studying the morbid processes encountered in toxic-infection psychoses, with resulting clinical findings in altered functioning, as based on the psychobiologic principles which we have hastily reviewed, we find it necessary to make comprehensive comparisons with conditions as we know them in health. To do this, it is necessary to know as fully as possible from history and observation the apparent normality of the patient. Also the personality, especially the defense reactions which figure in the endeavor to effect a compromise in, or to compensate for, inadequacies to meet life's realities. This matter of defense reactions is the psychogenic factor in many cases of toxic-infection psychoses, which go on to exhaustion and dissolution.

Human motives are strong factors in a large number of such cases and need to be more generally understood by physicians engaged in family practice. The number of cases of toxic-infection psychoses, as a class, are limited in number, yet more such cases are seen in private hospital practice than in our state hospitals. Kirby,[14] in his last report as clinical director of Manhattan State Hospital, gives 1.3 per cent. of the admissions for this large metropolitan district hospital. Our experience in private hospital practice is 10 per cent. This difference may be in classification, but our judgment is that private hospitals, in the natural sequence of events, care for a much greater proportionate number of such cases. The sphere of usefulness of the private hospital is consequently of enhanced value to a community or a locality, because of its more individualized and private care, its convenience of access, and the fact that such cases do not have to be committed in order to be admitted as patients.

The clinical history shows we are dealing with a grave malady. Certain persons, as we know, are more susceptible to exhaustion, shock and mild mental perturbations, such as slight delirium with febrile reactions, while in the more profound toxic and infectious states, more disturbing emotional reactions may develop more serious forms of deliria, including collapse—delirium and psychoses with exhaustion.

We have noticed in preceding remarks that there is no one etiologic factor responsible for the start of the kinetic drive, which eventuates in these terminal results. This fact is in keeping with Bonhaffer's statement made some years ago. This is why careful history, study of the personality and the constitutional make-up of the individual is necessary to determine the particular etiologic factor in each case. The clinical symptoms, physical and mental, are briefly the general appearance of illness, the skin as a rule is dry; nails are brittle; the face, drawn; pupils, dilated; tongue, coated; general nutrition shows loss of weight; the pulse varies according to the degree of emotional excitation; the temperature is usually subnormal; the laboratory findings show mild degree of secondary anemia; the urine, of high degree of specific gravity, and may show the existence of nephritis or diabetes as a complication. The blood pressure likewise is variable, depending on complicating factors; usually in depressive cases, the pressure is higher than the average; in cases with excitement, the pressure is apt to be low. Diastolic pressure is the most significant, both in the progress of the case and in prognosis.

14. Kirby, George: Manhattan State Hospital Report, 1917.

The recent studies of Porter[8] on the war front, as regards blood pressure in shock, emphasize the importance of initial fall of arterial diastolic pressure. To determine the fact that circulatory failure has begun without a knowledge of the factor to which it is due, is of little value in the application of remedial measures. The neurologic findings are of importance, and become of greater value as the case progresses. Because of variations in the reflexes, increased or diminished, of large or small excursion as the case may be, it is not unusual to see organic disease diagnosed such as multiple sclerosis; even brain tumor, etc., has appeared in our case histories.

Disorders of perception are characteristic, including all of the special senses. Peripheral analgesia is quite constant and figures conspicuously in the elaboration of the mechanism of the psychosis, accounting for the confusional states, inertia, hallucinations, disorientation, memory defects, defects of judgment and consequent delusional states with marked incoherence. What is true of irritations of the special sense functioning, is likewise true of the motor mechanisms, hence the restlessness, violence not infrequently, and finally volitional inhibitions extending to all muscular activities, including speech. Sleep disorder is an early experience, and out of its perturbations grow the modified dream states, the terrors, and finally the somnolence with its mutterings, merging into unconscious terminal states.

The range of clinical types of cases from mild recurrent attacks to profound collapse delirium, afford opportunities for interpretations on the part of the clinician which test his resources both in diagnosis and treatment.

TREATMENT

The general principles of treatment of toxic-infection psychoses have been built up little by little. They involve the broad principles based on clinico-therapeutic observations, leading to certainty as to scientific values; of these, first and foremost is rest, as a conservation of energy indication. This is based on the psychobiologic need for rehabilitation, conservation of functional neural mechanisms. Weir Mitchell,[11] Jackson, Hilton and other pioneers long since called attention to the need of rest rather than exercise in the cases where the experienced clinician interprets the borderline of exhaustion. That the traditions of the past are actively at work today in enforcing exercise on the overfatigued individual are noticed in our experience almost every day. Why is it an intelligent clinician, clear in his interpretations of clinical facts, is not clear concerning therapeutics?

The principles of the rest treatment have not yet reached the profession as a whole. They look on rest treatment as a therapeutic fad and completely overlook its intrinsic values as based on rational clinicobiologic principles. We have for the years of our experience in psychiatry been adherents to the principles and practice of rest in the treatment of mental disorders. Absolute rest is indicated just as in the more definite disorders like broken legs, typhoid fever, cardiac lesions, etc.

The rationale is understood by the physicians in such cases, but in exhaustion psychoses, even as a preventive measure, rest is overlooked or tentatively applied. Motor restlessness, sleep disorder, etc., are improved by rest methods, to which as an invaluable adjuvant, hydrotherapy with continuous bath promotes sleep

and lessens motor irritability. Drug medication contributes help, if we keep in mind the fact that we are to harmonize expenditure with real dynamism and not contribute to the toxic overload with which the patient is already struggling. The choice of sedatives is usually hit or miss, the trial and error method, with no thought as to cardiac complications, nephritic, diabetic states, or whether the patient is a vagotonic, with peculiar limitations as to drug therapy. Drug medication is of preponderant value when intelligently used. Especially is it of individual value in complicated cases.

The cardiovascular and cardiorenal complications, especially need intelligent oversight as they are the most formidable crises we meet in these cases. Acute cardiac failure with its dynamic mechanisms, reduction of arterial pressure, diminished venous return and reduced cardiac power mark these crises. Wiggers[15] says that the detection of the earliest degree of shock (exhaustion) is extremely important for this purpose; the initial fall of arterial diastolic pressure is to be determined. We have no circulatory sign or criterion by which the incipient state can be detected. But to counteract the mechanisms of cardiovascular crises, the apt suggestions of Wiggers apply, namely: (1) The reduced resistance must be overcome (peripheral); (2) the deficient venous return must be replenished. The drug therapy consists of: (1) vasoconstrictor drugs—epinephrin intramuscularly; (2) intravenous infusions, physiologic sodium chlorid solutions (Bayliss formula), and as suggested by Porter, the breathing of carbon dioxid mixture.

The object of all procedure is to augment venous pressure. Porter[8] says: "The critical level of blood pressure is that point below which blood pressure will not rise again without assistance." An understanding, then, of the critical level is of first importance. If the blood pressure just touches the critical level, a difference of 10 mm. of mercury may be the difference between life and death. A few millimeters above this level, recovery will usually occur spontaneously; a few millimeters below, death will follow unless skilled aid is at hand.

It follows from this vital fact: (1) Procedures which at ordinary blood pressures are not harmful or are but slightly harmful may kill the patient at critical level; (2) remedies that raise the blood pressure but 10 or 15 mm. will save the patient, when rise carries the blood pressure from just below to just above the critical level. The critical level varies with the condition of the nerve cells and other tissues. A blood pressure high enough to maintain a sufficient nutrition in normal bulbar nerve cells is too low to maintain life in cells that already suffer from malnutrition. In that case, a blood pressure raised to a point above the usual critical level will shortly sink again. Hence, the importance of frequent readings of blood pressure until shock (exhaustion) patients are clearly out of danger.

Treatment not based on repeated readings of blood pressure is not intelligent and may be harmful. The diastolic pressure should be employed. The systolic pressure falls more than the diastolic. Conclusions from systolic pressure may err 15 mm. or more. At the critical level, a change of 15 mm. may mean life or death. The error in using the systolic rather than the diastolic pressure may do much harm.

15. Wiggers, Carl J.: THE JOURNAL A. M. A., Feb. 23, 1918, p. 508.

Fraser and Cowell,[7] in study of blood pressure in wound conditions, have contributed valuable knowledge in the use of physiologic sodium chlorid solutions in treatment of shock. They have been disappointed with clinical results obtained, and blood pressure readings confirm these facts in the use of normal salt solution (0.9 per cent. sodium chlorid solution). They have obtained satisfactory results from the hypertonic solution suggested by the Medical Research Committee: sodium chlorid, 2 gm.; potassium chlorid, 0.05 gm.; calcium chlorid, 0.05 gm.; water, 100 c.c. Also the colloidal solution suggested by Bayliss[10] and Cuthbert Wallace: calcium chlorid, 0.075 gm.; sodium chlorid, 1.325 gm.; gum acacia, 2 gm.; water, 100 c.c. Sterilize; if kept in solution for stock solution, resterilize before using. Use from 15 to 20 ounces, or even 30 ounces, intravenously. Give slowly at the rate of 5 ounces in five minutes. Maintain heat at reservoir at 120 F. Give in cephalic or saphenous veins through small glass cannula. Repeat every twelve or twenty-hours.

Blood pressure rises within a few minutes. Injection of the calcium hypertonic gum solution will produce an immediate rise of pressure in cases of hypotension, complicated by toxemia.

Our object in treatment is to meet the cardiac crisis and to tide the patient over this lowered reserve, until blood pressure conditions are improved, the alkali reserve of the blood has been brought up, and cardiac nutritional conditions have improved. Thus, we avert acidosis, which is the terminal clinical exhaustion condition from which death eventuates, unless the heart first fails. Cannon[6] says that "the lower the blood pressure, the lower the alkali reserve, that is, the greater the acidosis."

From clinical evidence, the conclusion is warranted that bodily states characterized by reduced blood pressure and consequently by defective circulation are accompanied by a diminished alkali reserve, and that, as a general rule, the lower the pressure the lower the reserve.

The danger Cannon calls attention to is the precipitous drop in blood pressure, to which Porter alluded, and which our experience confirms. Cannon insists we must keep up the alkali reserve. This has been our practice, and we supply the alkali by warm solution, either intravenously or by continuous proctoclysis, rectal drop method; also, by mouth, sodium bicarbonate, 1 dram, to 8 ounces of sweetened water.

REST METHODS

It is imperative that rest in bed continue indefinitely. The results are to be measured wholly by the nutritive state of the patient. Weight is in most cases the criterion of nutritive rest values, after the dangers of malnutrition have been met. Weir Mitchell[11] emphasized the importance of the physiologic value of adipose tissue. The variation in weight of individuals is well understood, but when it becomes pathologic then it is our duty to meet it and change the loss to one of gain.

Each pound gained is an increment to potential, nutritional values, and points the way toward recovery. This usually means that fat is a wholesome condition and means more and better blood and improvement in color, muscular strength and improved sleep. Mitchell said that the exact relations of fatty tissue to the states of health are not yet understood; but

since, on great exertion or prolonged mental or moral strain, or in low fevers, we lose fat rapidly, it may be taken for granted that each individual should possess certain surplus of this readily lost material.

Feeding in exhaustion is an individual problem to a certain extent. At first, it is a question of tolerance and of overcoming the tendency toward acidosis. Exhaustion, fatigue and toxemia interfere with the progress of digestion, and when this condition has become more or less habitual, then is presented our problem. Here is where fluid becomes a necessity and, as Stiles[16] says, "Water is the largest item of income of the human body and an essential part of all tissues." Its percentage cannot be lowered without hazard to the body and even to life itself. Water not only adds to the elimination of dissolved tissue waste through the skin and kidneys, but its excess flushes the kidneys, keeps the skin moist, and promotes digestion. The kidneys are greatly hampered by being compelled to excrete a maximum of solids with a minimum of water, which duty they are called on to perform in exhaustion states.

Osler said water is the greatest diuretic. Hawk of Jefferson Medical College has shown by experimentation that the taking of water with meals is wholesome and advantageous in digestion. He has shown that fecal nitrogen is lower when water is taken in large volume, than when it is forbidden. This fact he holds to indicate more complete digestion and more thorough absorption. It is our practice to give water freely and to this end, when indicated, to follow the ingestion by mouth, even by tube if necessary, the use of proctoclysis by the rectal drop method of physiologic sodium chlorid or hypertonic saline solution given at bodily temperature.

We believe we have saved many lives by giving of excess fluids as the one measure which has turned the tide in favor of overcoming the exhaustion state. Stiles says, "Laboratory experiments show that dilution of fresh secretions is at least as likely to increase as to diminish their activity. It must be borne in mind that the dilution of a liquid containing a fixed amount of enzyme does not reduce the quantity of enzyme, but only makes it act in a larger volume in the mixture."

To encourage the taking of fluid, it is our practice to use palatable drinks, even coffee and tea in moderation, and other fluids, all for the purpose of cultivating the habit of taking fluid. Our experience is that the average person, especially women of neurotic constitution, do not take sufficient water. In exhaustion cases, it is the rule that these patients do not volunteer to take fluids in any form. With improved nutritional additions, we find the sleep habit more amenable to return to normal conditions.

Elimination removes the accumulated waste which acts as toxic irritants, to keep the patients awake and to contribute to dream states and confusion growing out of hallucinatory experience, which, in turn, aid in harboring delusions, all of which phenomena disturb sleep. We can aid the return to normal sleep habit by the use of hypnotics, the choice of which must be based on physical indications. The bromids are not hypnotic, but they may reduce psychic and motor irritations, which may be all that is necessary to permit the patient to go to sleep. Their use is limited in defined toxic and exhaustion states. What is needed is a hypnotic which is not a depressant or which may contribute to the overload already present. To this end, paraldehyd renders good service in the more acute cases. It should be given just when needed and in as palatable form as possible.

The synthetic hypnotics are useful, but sulphonal is not safe in exhaustion states. Veronal is by far the safest and, in our experience, the most dependable hypnotic of this group and class. We must caution against the use of scopolamin hydrobromate in exhaustion states. It is dangerous, especially in vagotonic cases, and may contribute to collapse, especially in cases complicated by cardiovascular or cardiorenal conditions.

The continuous bath is in suitable cases of invaluable help and later the tonic baths, to stimulate metabolism. Conservation of energy is our shibboleth throughout the treatment.

Enforced rest methods to be pursued to this end are all of the adjuvants, namely, rest in bed, seclusion, feeding, massage when the time comes for its introduction, and then, with intelligent understanding of the degree as to its use, diversion, psychotherapy to contribute to insight of the patient's own condition—all leading to a rounding out of convalescence. Then, after-care, in ascertaining the patient's limitations, based on clinical findings, as to systemic conditions, namely organic disease in any system, the presence of constitutional disorders, the personal reactions to emotional stimulation, the tendency to worry, to be anxious, etc. In fact, a survey of physical and mental characteristics and tendencies should be made, in order that the patient may be forewarned, and thus forearmed, to meet the emergencies of life and its realities. If a patient can grasp these essentials, a prognosis can be given that a recurrence is not likely to occur and a large percentage of usefulness in life assured.

16. Stiles, P. G.: Nutritional Physiology, Philadelphia, 1915.

ABSTRACT OF DISCUSSION

Dr. Theodore Diller, Pittsburgh: There is no essential diagnosis quite so important as the recognition of nervous and mental conditions due to factors which are toxic in character, for the reason that these conditions so well respond to appropriate treatment. It must have been the experience of all of you to have seen profound toxic and exhaustion psychoses make very excellent recoveries. In a practical way, these symptoms vary all the way from a slight tremor through cardiovascular symptoms and up to a profound delirium.

I wish to cite a case which illustrates the great importance of differential diagnosis between toxic exhaustion state and organic disease: A man, 30 years of age, was brought to me by his mother, who stated that for some weeks past he had been quite forgetful. His speech was slurring and suggested paresis. His face looked tired, tremulous and ironed out. Handwriting made in my presence exhibited marked tremor; knee jerks were sluggish; pupils reacted to light quite sluggishly. I made the diagnosis of paresis with considerable confidence and sent him to the hospital for laboratory tests. These showed blood and spinal fluid both negative, globulin normal, and cells 3. I reexamined the man with more pains and discovered that he possessed excellent insight; and I further noted that while the handwriting was bad there were but few errors in spelling. Gradually and then more rapidly, at the hospital, under complete rest treatment, his speech defect disappeared and the handwriting greatly improved. At the end of six weeks the speech was nearly normal and the handwriting hardly exhibited a defect. The diagnosis of paresis was revised and the case recorded as one of exhaustion psychosis—an extreme asthenic state. I suppose such problems of differential diagnosis occur seldom. I can recall only

one other case, one which occurred many years ago, which presented the same diagnostic problem.

DR. RALPH REED, Cincinnati: It is important to remember that there may be an exhaustion of psychogenetic origin. I readily concede that many of the psychoses are of toxic origin and also many of the neuroses, but I believe that there is a complaint of exhaustion which is nothing but an expression of dislike for the particular work the patient is doing. It is an evidence of inhibition rather than a true exhaustion. Work can be a pleasure or a pain, depending on how much we love it or hate it. Work in which some deeply disagreeable emotional factor is involved is always distasteful. An inclination toward its abandonment under the plea of exhaustion, the plea of working too hard, etc., is thus in some cases merely a rationalization of distaste for that particular work. A year ago a young man who was working for his father in a large mill came to me. He could not work two hours without becoming intensely exhausted, but it was curious to note that this exhaustion was not so great that he could not pace the office almost every minute he was there. Therefore, his exhaustion was a rationalization of his really unconscious distaste for his work. When certain depressing factors due to unconscious antagonism toward his father were removed, the exhaustion disappeared, and he is now able to work eight hours a day. But if there happens to be a slight renewal of that antagonism between father and son, he again comes to me with his complaint that the work tires him.

DR. MEYER SOLOMON, Chicago: The trouble with Dr. Reed's patient was not really an exhaustion; he simply acted as if exhausted. That is one of the problems we have to consider when we discuss the effects of the mind or the body. Ideas, attitudes on the part of the patient, cannot bring about disturbances of the sort discussed by Dr. Norbury. An idea may lead to a transient reaction of the voluntary nervous system, but when you get phenomena of real exhaustion related to some part of the nervous system, whether of the voluntary or of the vegetative nervous system, the symptoms are due to something else. We may look on the effects of shock, emotion, etc., in the following way: If we view the development of the mind and nervous system from the highest functions down we find that the highest function is critical consciousness; then comes observing or passive consciousness, then the ideational phenomena, then the locomotor and postural phenomena, next the vegetative reactions, and, finally lowest are the physicochemical reactions. Shock, emotion, trauma, etc., may cause a disturbance anywhere along the line, in the same way that a toxemia, an infection, or what not, may bring about the same sort of disturbance. But the disturbance you see is a physiologic disturbance, due to a reaction on the part of the nervous system or of some one or several of the organs, and the treatment is not only psychologic but physiologic also.

Let us take an illustration: An individual begins to worry about something that has occurred and he develops insomnia. As a result of the insomnia he develops headache, asthenia, loss of appetite, loss of weight, etc. The symptoms he has are real symptoms due to fatigue, to exhaustion. You are not going to convince the patient that he has not real symptoms, because they are real to him. The treatment is relief of the symptoms, physiologically or by drugs, plus an explanation to the patient of the origin of the end-results that he presents. The symptoms he has are true phenomena, just the same as in shell shock cases.

The psychogenetic viewpoint is interesting, but we should not be swept away by the idea that hypnosis, or "unconscious thought," can, in a peculiar way, disturb permanently the involuntary or voluntary nervous system. They are really physiologic reactions and the treatment should be not only psychologic but physiologic also.

DR. C. K. WOODSON, St. Joseph, Mo.: Loading beyond the carrying, resisting capacity interferes with function. The man or woman who tries to work sixteen hours a day, or who assumes work when not well, or when not properly nourished, interferes with carrying or resisting capacity. Toxic conditions favor the lowering of resistance, and this, in turn, favors the production of a toxic condition. The individual who takes good care of himself, who works reasonably well, who takes sufficient exercise, who takes sufficient rest, can carry much better than the one who assumes to work sixteen hours a day and has insufficient sleep, and who worries. Toxins interfere materially with the functions, whether the results be a mental depression or a manic depressive form of insanity does not matter. The same results will come from the same causes, or the same causes will produce the same results. The individual who is not eliminating properly is not in normal condition; the man who is eliminating with a purgative is not in normal condition. In fact, almost all these patients are run down; they are below the standard weight; they have a tired feeling; they think slowly; they do not want to do much; they are confused, bewildered. And if we follow these cases through we find that when they improve in health, it is because they are beginning to sleep and eat well, after which they improve right along under ordinary circumstances.

DR. FRANK P. NORBURY, Jacksonville, Ill.: With reference to Dr. Reed's point as to a psychogenetic basis, I think the individual is endeavoring to dominate his environment whether you approach his problem from a psychogenetic or a physical point of view. The individual has to live, and it is the living he is endeavoring to elicit. Life is a struggle; and he has to make arrangements to survive. That is the point we have to consider. The associations through the man are explained also, and as such they explain the physical disintegration, if you wish to call it that, and all the factors that go with it. We are dealing with a state of exhaustion, confusional states, including confusion in the perceptive functions. All the faculties are thus in a state of confusion; this confusion reflects itself in disturbances which have to do with the general physical condition of the patient.

SOME SUGGESTIONS FOR MORE ACCURATE MENTAL THERAPY IN EPILEPSY *

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Until a few years ago epilepsy was largely diagnosticated by exclusion. After a complete medical and neurologic examination of a person who had fits, and in the absence of any marked evidence of any physical or mental disorder, he was called an essential or idiopathic epileptic. He practically had an enduring disease without any discoverable cause for it. Of late, a number of investigators have undertaken to study the whole subject anew, not alone from the physical, but also from the psychologic point of view. As a result of these studies, we believe a considerable advance in our knowledge of the subject has been made. For instance, we have analyzed the make-up of the essential epileptic as an individual, to discover, if possible, whether he constitutes a particular type. We have also studied the fit in the light of a biologic reaction and endeavored to analyze the fit as a part or a further elaboration of such an individual's peculiar make-up. In other words, given a certain potential constitution plus a special type of stress applied to it, we gain a certain psychologic effect which we have called the epileptic reaction. In many instances, the ultimate reaction is what is commonly called a convulsive fit. We may, therefore, consider briefly today, first, the constitution or make-up of the essential epileptic, second, the epileptic reaction, and third, sketch the main suggestions for a mental therapy based on such a rationalization of this great disorder. In passing, permit me to state that all

* Read before the Section on Nervous and Mental Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

the physical disorders including the late studies of endocrinic disturbances are not dwelt on here, not because they are unimportant but because an exact mental approach in the therapy of this disease has in the past been so neglected, or has been handled in a haphazard and empiric manner.

The epileptic constitution, or make-up, has long been recognized as the enduring mental stigma of essential epilepsy itself. Only recently have studies disclosed that the main tenets of such a character are present years before the nervous disorder of epilepsy is shown in fits. Indeed, most frequently some part of these defects of personality may be detected in earliest childhood. The chief instinctive defects of the potentially epileptic individual are egocentricity, supersensitiveness and emotional poverty. The potential epileptic is intensively self-centered and fails to project his life interests into his environment in a normal and healthful manner. Partly because of this innate character fault, he is or soon becomes unduly sensitized to all forms of extra stress and annoying demands. He either extroverts his supersensitiveness by exhibitions of rage and tantrums beyond those which may be seen occasionally in passionate children, or, he introverts this feeling and represses the feelings engendered by his environmental conflicts, causing him to develop a very unstable, irritable and sensitive emotional life. This emotional state paves the way for larger and more difficult adaptations which he cannot meet; outspoken fits may then occur. By possessing an egocentric and supersensitive make-up, the potential epileptic fails to make the degree of environmental contact which would lead him into a broad and rich experience with life, hence sooner or later he fails to acquire a well rounded emotional development. This deficit may or may not limit the individual's purely intellectual equipment in later life. Previously endowed with these defective instincts, the increased demands of adolescence and adult life enlarge the difficulties which such individuals are compelled to meet until they reach the breaking point in a fit or seizure. A disintegration of habits and character, known as deterioration, occurs more easily in one thus handicapped by a defective endowment. Therefore, mental or behavior deterioration often precedes actual epileptic seizures for a considerable time. The primary defective endowment plus its easy deterioration accounts for the fact that an essential epileptic from the very nature of his make-up is usually doomed to mental failure, if proper measures to check or controvert his innate faults are not taken at the earliest possible moment. Any effective plan of treatment must essentially take strict and early account of the make-up of epileptics, before all else.

It has been commonly held that even after the first grand mal fit, the epileptic disorder is already a chronic one and only too often defies any and all forms of treatment. This view is true and understandable in the light of what we have just considered. We can only profit by it in the future by steadily educating parents and relatives to recognize the earlier and more benign presence of epileptic reactions such as lethargies, twilight states of petit mal, pathologic absentmindedness, crass rages and tantrums, and the like excessive morbid emotional states. It is now obvious to the careful observer that the fit itself is a reaction away from the excessive stress which may have increased the nervous and mental tension. The unconscious state has different degrees of depth depending largely on the amount of tension previously experienced. Usually it is not the degree of stress per se, but the amount of repression which the epileptic exercises which springs the fit-gun, as it were. From more recent studies we have analyzed the spontaneous productions or mental content of individual petit mal attacks. In these short delirious or automatic episodes occurring with or immediately after these seizures, one may find from the mental content the type of stresses which irritate and baffle the epileptic. These as well as the deeper strivings which may be recovered in the fit furnish data on which we may construct a rational reeducational therapy of the broadest yet specific moment. Time forbids our citing specific or detailed illustrations here. A series of such cases studied in detail are being published elsewhere. Suffice it to say that in the long series of cases studied at Craig Colony and in private practice we have learned more precisely in the mental content what the everyday conscious conflicts of epileptics really are. The basic idea in such studies is to determine the particular kind of defective make-up and its specific conflicts in everyday life. Then we try to induce the epileptic to take a better insight as to his innate faults and his conflicts and thus cause him to see the sequence and consequence of his crude handling of life.

The real therapeutic advantage to the epileptic in this whole procedure is comparable with that obtained by those who suffer from the benign psychoses, who, we know, are very considerably aided in making a more stable recovery from the individual attacks, and further fortifies the individual against possible recurrences of his psychotic episodes. Any one following this therapeutic method should bear in mind that continued epilepsy from its very nature is a deteriorating disorder physically and mentally, and if it be allowed to progress, it steadily lowers the capacity of the individual to make new or difficult adaptations, hence any principle of treatment which is based on a reeducational plan of living, as this method does, is itself liable to be very stressful. If it is done without due care and patience it places extra strain on the epileptic and may thus entail more seizures than before it was begun. Frequently the plan of analysis and reeducation given here must be undertaken for short periods only (days or weeks) and then the patient should be allowed to rest in his newly acquired position until he thoroughly accustoms himself to it, after which advanced work may again be undertaken. If the same mental content repeatedly returns in the automatic delirium in attacks, one must conclude that the special conflict brought out is so basic that no mere analysis will set it free. Then a practical system of training and reeducation must be instituted. Sooner or later one finds that analysis of the mental conflicts but indicates the road for an entire system of reeducation for these epileptics. The individual's susceptibility for this reeducation will give a just estimate of the prognosis in the particular case. It has also been found that coincident with a gradual disappearance of epileptic reactions, as shown in the fits per se, there must be a corresponding increased capacity for work and other spontaneous living interests. Usually these latter clinical evidences of betterment are heralded by a shortening in the reaction time and a lessening of perseveration. The mere cessation of attacks, without corresponding improvement in the psychologic tests, really indicates that the underlying

deteriorating disorder has not been as yet favorably modified, and the epileptic attacks may in the course of time be expected to return.

Finally, one may say that a study of the epileptic make-up and the mental content in epileptics, both everyday conscious ones, as well as those shown in the unconscious state, demonstrates (1) the depth of the unconscious regression; (2) the special type of stress which the epileptic has, and (3) the specific type of primary defect in his endowment which must be handled in reeducation. Its therapeutic value in addition to the foregoing is (4) to furnish a specific point of analytic attack by simple explanatory talks, thus increasing the patient's insight into his disease, and (5) to show more definitely the type of special reeducation which should be adopted for each individual patient.

ABSTRACT OF DISCUSSION

DR. ARCHIBALD CHURCH, Chicago: I would like to ask Dr. Clark to give us more concretely the results obtained by the application of these views in the management of epilepsy.

DR. MEYER SOLOMON, Chicago: I wish to ask Dr. Clark how he can prove that cases which do not develop real reactions of convulsive type, but which are of the sort he has described under the name of the epileptic constitution are really epilepsies if they do not develop the reaction of the convulsive type. It all depends on how you want to use the term epilepsy. If there are no petit or grand mal attacks, how can you say that the patient has epilepsy? The sort of makeup Dr. Clark has described may be found in the feeble-minded, in neurotics, and in many other persons who do not develop epilepsy.

DR. JOSEPH BYRNE, New York: I became familiar with Dr. Clark's work some time ago and have applied it at my own clinic. The method we formerly employed was the usual routine method, thorough examination in every case followed by operation in suitable cases. In epileptics of various grades we now combine the psychologic and operative methods. In other words, before any attempt at decompression is made, analysis of the personality and an attempt at reconstruction through education are made. Our results have been quite good. Perfect cures are not always to be expected, but the improvement in our patients was such as to convince us of the worth of the method.

DR. L. PIERCE CLARK, New York: The method of mental treatment which I briefly outlined in my paper has slowly been built on careful clinical experience and is still being modified and elaborated. It is primarily based on an intensive study of the epileptic as an individual, and the disorder of fits as a more or less necessary corollary of such a potential character makeup when encountering undue stresses. I believe it enhances the former physical and empirical therapy for this disorder at least 50 per cent. It is particularly serviceable in the very earliest cases, but has been found of inestimable value in the care and treatment of the interned cases also. My scheme makes no claim to say exactly what the nature of idiopathic or essential epilepsy really is, but we should seize on those modifiable factors in the epileptic individual and thus improve his social adaptability in its widest sense. To do this most successfully we must detect the epileptic character and habit at the earliest possible moment.

Comparison of Value of Milk with Other Protein Foods.—With bottled milk at 14 cents a quart, 1 cent buys 46 calories (fuel food), including 1/15 ounce of protein (building food). For porterhouse steak at 35 cents a pound, 1 cent buys 30 calories of fuel food, including 1/15 ounce of protein. With eggs at 60 cents a dozen, 1 cent buys 16 calories of fuel food, including 1/30 ounce of protein. At the foregoing prices 1 quart of milk supplies as much food as 10 ounces of porterhouse steak or 8 eggs.—*Weekly Bulletin* New York City Department of Health.

CARBON MONOXID POISONING: ITS NERVOUS AND MENTAL SYMPTOMS

REPORT OF CASE *

CHARLES W. HITCHCOCK, M.D.
DETROIT

McNally[1] makes the somewhat surprising statement that "deaths from carbon monoxid poisoning in large cities now exceed those from any other poison." The total number of gas cases in Cook County, Ill., for 1916 was 501, nearly 8 per cent. of the entire number of coroner's cases. Much of the increase, of course, is a purposeful one, illuminating gas being an easily available means of suicide. Industrial and domestic sources are, however, not a few.

"The proportion of carbon monoxid differs greatly in domestic and industrial gases, varying between 4 and 30 per cent.—in coal gas, 4 to 10 per cent., and 30 per cent. in water gas, and 20 and 30 per cent. in producer gas—almost all illuminating gas containing a large proportion of water gas. Stoves, salamanders, furnaces, blast furnaces and gas engines are not infrequent sources of this poison. Increased use of gas in the winter months accounts for the large number of deaths at this period of the year. If all gas stoves, plates and heaters were connected by metal instead of rubber, many lives would be saved."

As to the operation of the poison, I quote McNally further: "Carbon monoxid combines chemically with the hemoglobin of the blood to form a stable compound. According to the research of Nicloux, one volume of carbon monoxid acts like 220 volumes of oxygen. The corpuscle is not dead. All it needs is oxygen under sufficient tension to displace the carbon monoxid." In line with this are cases reported by J. Bock.[2]

Body of man found on floor near defective stove, two thirds hemoglobin of his blood transformed to carbon monoxid hemoglobin. A baby near him showed no signs of poisoning. Body of wife in adjoining room, and only one fifth of her hemoglobin had been so transformed. It is assumed that she was as deeply poisoned as husband, but sought another room where blood threw off the carbon monoxid gas. Bock says: "Evidently the central nervous system becomes irreparably injured from the after-effect of the protracted asphyxia."

With the various tests for carbon monoxid we need not concern ourselves here. My object in presenting this paper is twofold: (*a*) to call special attention to the dangers arising from automobile exhaust gases in closed garages, and (*b*) to note the nervous and mental symptoms attendant on carbon monoxid poisoning. Cases of carbon monoxid poisoning from the inhalation of automobile exhaust gas are, I think, more commonly fatal than otherwise. The files of an Accident Insurance Company, which paid the claim for the death, enable me to report the following case:

CASE 1.—S. M., residence, Chicago, employed as a chauffeur of a private car, had entered the garage, a small and closed one, at noon, Nov. 20, 1915, for some work about the machine. About two hours later a maid sent to call him could hear the engine running, but received no response to her summons.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. McNally, W. B.: Carbon Monoxid Poisoning, THE JOURNAL A. M. A., Nov. 10, 1917, p. 1586.
2. Bock, J.: Hospitalstid., Copenhagen, Jan. 2, 1918.

She at once procured a key, unlocked the door, and the body of the man was found in the seat of the auto, dead, the engine still running and doors and windows closed. There were no marks of violence. There was "pinkish red discoloration all over the body, including the face and extremities. The internal organs were found healthy." The coroner's chemist reported on the blood taken from body for examination (3 ounces) as follows: "A chemical examination shows that the blood was 58 per cent. saturated with carbon monoxid. The blood responded to the tannic acid, lead acetate, palladous chlorid tests, and the spectroscopic examination for carbon monoxid hemoglobin."

In January last, Dr. F. W. Nagle of Montreal, president of the Anesthetic Association of America and anesthetist of the Royal Victoria Hospital of Montreal, was found dead in his garage, suffocated by gasoline fumes.

Through the kindness of Dr. R. P. Albaugh of the Division of Industrial Hygiene of the State Department of Health of Ohio, I am able to cite two cases, neither of them directly fatal.

Case 2.—R., man, aged 39, single, American, suffered from a slight case of malaria fifteen years ago. As a gas combustion engineer, he worked constantly for years in a small, poorly ventilated laboratory, over gas jets. About three years ago, he fell from his chair in an unconscious state and remained in this condition for several hours, when he apparently recovered. He continued his work for about two years, during which time he had three or four recurrences of the unconscious state which came on suddenly. In the interim, he has had frequent occurrences of forgetfulness and at times a complete lapse of memory for a few minutes, during which lapse, he would talk incoherently, and after it subsided would take up the thread of his story and continue the conversation. At times, after these attacks, his memory would remain clouded for several hours.

Laboratory analysis of the patient's blood revealed carbon monoxid in large amounts at different times over a period of more than two years. The blood count was: red cells, 5,500,000; white cells, 8,500; polymorphonuclears, 68; small lymphocytes, 4; large lymphocytes, 24; eosinophils, 4.

After going under the observation of a physician, he has suffered from periods of unconsciousness about once a week, periods lasting about five minutes, and also periods of lapse of memory lasting about a half hour, and averaging five or six a week. At present he is undergoing treatment consisting of breathing exercises, graduated walks and daily inhalations of oxygen. Carbon monoxid has been gradually eliminated from the blood since this treatment was begun, which has lasted for a period of about a year.

Case 3.—M., man, aged 30, with negative previous history, went to his private portable garage, on an unusually cold morning, started the motor and returned to the house, where he stayed a few minutes. He went back to the garage to put some oil in the machine and while doing so, smelled something very sweet and had a desire to laugh. He saw yellow flashes before his eyes and felt weak in the knees. His first thought was to sit down on the running board, but decided to go to the house. When just outside of the garage he felt a sudden throbbing of the temples and extreme weakness. His wife found him an hour later lying in the snow apparently asleep. He could be roused, but staggered and could not have walked alone. He was placed in bed and proceeded to sleep as if in a normal manner. He awakened in an hour complaining of dizziness and was unable to walk. He complained of a throbbing headache and talked incoherently. He apparently recovered that day and returned to work the following day. Associates stated that he talked incoherently at different times during the day and was unable to remember dates and other simple facts. He returned home in the evening and remarked that he could not get any sense out of the evening paper, which he had been trying to read. During the night, a severe headache and cough developed with some dyspnea. A physician was called in the morning and found the patient suffering from pneumonia. He developed delirium in a few hours and passed into coma, dying that night.

Still more interesting is the case which I have had the privilege of seeing, and concerning which I entertain a good ultimate prognosis, although recovery is exceedingly slow.

Case 4.—July 13, 1917, I was asked to examine G. W., a man, aged 32, a chemical engineer of college education. His family and personal history were negative. His complaint was of loss of memory, forgetting even things he had just done, names, events, etc. He had been well up to the following occurrence: He says that, Feb. 10, 1917 (month told by him, but day by his wife), he had been to his place of employment and attended to his duties as usual. He came home soon after noon and after luncheon went out to his garage to charge the battery on his car. He thinks he propped the garage door open, but it blew shut, the engine of the car running to charge the batteries. He did not know that the door was shut. Beyond this point, he has no memory of immediate events. About an hour or more later, his wife found him collapsed and unconscious on the garage floor, near the exhaust and the engine running with a very "rich mixture." Medical help was at hand in five or six minutes, the heart was found racing violently and respirations were only five or six per minute. A little later the pulse was only 40. Artificial respiration, strychnin and digitalis were vigorously made use of. He was unconscious until evening, some four or five hours, and then was irrational, drowsy and but partly conscious, for some time. The week following, he was very weak; knew every one of his friends, but would forget that any one of them had been there, if, for instance, he chanced to leave the room. He gradually improved physically and his pulse became normal, about six weeks after the accident.

When I saw him, he was said to be lax in his personal appearance, quite unlike his normal self. He was able to drive his car in quiet and accustomed places, but felt unequal to driving it where any traffic was. He was able to do a little work in his garden, and improvement was noted as to memory, ability, etc., but he could not collect himself sufficiently for laboratory work, and he lacked initiative for any work. His wife thinks him not as friendly in his attitude toward others as was his wont. In appearance, he was well nourished, of dark complexion, his face wearing a rather blank expression. He was inclined to be despondent and doubtful of his gains. His wife (apparently a good observer) notes his improvement from week to week, and that recently he has been able to listen to and follow short stories, which he could not previously do, appreciating their nice points.

The heart was then normal; the pulse, 65, and of good volume, and the respiration, normal. The urine was normal, and the systolic pressure was 110 mm. of mercury. Both the deep and superficial reflexes were quick and active. His pupils were equal and normal, and speech tests brought normal responses. There were no sensory changes and there was no Romberg symptom present. No cause for any memory defect could be discovered other than the occurrence of February 10.

Aug. 6, 1917, his wife reported his further improvement, and that he was then able to read stories himself, that he had promptly answered a business letter without help, aside from being told the date. The day before he was depressed and easily emotional, had cried several times.

Dec. 13, 1917, his wife wrote from Saskatchewan, where he had gone in September to recuperate: "Although my husband is better, he is still unable to resume work. The memory defect is still there, but not as pronounced. Things happening five or ten minutes back seem the hardest to recall. He can remember what has happened during the day now, but does not seem sure. He seems to recall the occurrences of the past eight months, but the first two months after his illness seem almost a blank. The month past is quite clear to him. His

eyes seem brighter, but he does not smile often and seems to have a worried look." There was, therefore, a continued anterograde amnesic defect and emotional disturbance. He even once gave a hint of possible suicide, if his recovery was not soon complete, and this naturally led to great care in letting him go out alone. Reminded to answer a letter, he wrote a two page letter, but it took him all one afternoon to do what he would ordinarily have done in ten minutes. He lacks his former ambition and energy, and is decidedly wanting in initiative and, at times, though rarely, is irritable, if urged to do other than as inclined. He was less easily emotional than he had been.

March 16, 1918, there had been comparatively little change. He was much inclined to be depressed and discouraged, and doubt his eventual recovery. He has now gone to a farm, where he can have outdoor life and duties, and, April 22, was reported as anxious to help on the farm in any way he could, becoming more alert and grasping things quickly, but (his wife wrote) "The mind does not retain the impression made. He still forgets things as soon as they are past." She says: "If he received a letter, and then after reading it put in his pocket, he would forget all about it and would ask when it came, and if he had read it. He enters into a conversation now more than he used to, if no strangers are present, but is very quiet before strangers. If that memory defect would only clear up he would be as well as ever. Physically he is in splendid condition, although inclined to go to sleep rather easily."

There is, then, in this case, fourteen months after the accident, an anterograde amnesia still present, some emotional disturbance, and some depression, and these were still well marked, April 16.

The mental manifestations of carbon monoxid poisoning are most interesting. The most constant one referred to in the literature is a memory defect, and this is the chief complaint in my case.

Dr. Mary O'Malley[3] of the Government Hospital for the insane, reported an interesting case with complete recovery.

This patient, a woman, aged 45, native of Ireland, of negative history, was admitted to the hospital thirty-eight days after an accidental inhalation of illuminating gas, an open window having prevented a fatality. Immediately following her trauma, she had been for ten days in a general hospital, and two weeks after it had attempted to resume work, but it was at once noticed that she was dull and foregetful. A week later, it was noted that her movements were awkward, and peculiar, and that her memory seemed a complete blank. She attempted to put the trousers of a little boy on for a waist. She had outbursts of laughter without provocation. She was lost on the streets, became distinctly confused, and then was admitted to the hospital for insane. Here, in the next three days, "Mentally the patient was dull and apathetic: responded promptly to all questions, but was able to give little additional information in regard to personal matters. . . . Replies were irrelevant and accompanied by outbursts of laughter. . . . She had a mistaken identity of all persons in her environment. . . . There was a retardation and some incoordination in all her movements. Asked where she was, she said she was at home." In the next ten days she showed a tendency to confabulate, showed uncontrollable laughter, and had incontinence of urine and feces.

She then showed gradual improvement, and a mental examination about three months after her accident showed that she had recovered her mental faculties, but there was an anterograde amnesia covering a period of three months. Two months later she was discharged recovered.

Le Dosseur[4] "has collected a number of cases in which the following mental disturbances were noted: aphasia, acute delirium, transitory chronic delirium, mental confusion, amnesia, melancholia, dementia. On the physical side he found muscular paralysis of diverse types, hemiplegias, paraplegias and monoplegias, various trophic disorders, convulsions, etc."

Dr. P. C. Knapp[5] cites a case of retro-anterograde amnesia following a gas poisoning, which occurred May 10, 1910, the patient having been some hours unconscious.

She was then 43, had married at 25, and had led a happy domestic life. Her amnesia blotted out previously acquired memories, and there seemed to be an inability for new memories. She forgot the doctor continually, insisted that she had never seen him before, etc., although she might have seen him but a very short time previously. She did not know where she now lived, nor by whom her husband was employed. She later improved somewhat, but Oct. 3, 1915, more than five years after her accident, her memory was still defective.

"The amnesia may simulate the Korsakoff syndrome in the polyneuritic psychosis with confabulation, pseudo-reminiscences, etc. A defective memory may exist in a certain number of patients who recover. This amnesia is retrograde or anterograde in type: it is variable in course and intensity." In my case, the memory defect was rather of the anterograde type, and complete only for the immediate events attending and immediately following his accident.

Of the amnesia, peculiar to these cases, Sachs has said: "In the early stage of convalescence, a total amnesia is especially typical, either extending over the time before the poisoning, retrograde, or to the things of the present, anterograde." Le Dosseur has cited a case of a physician, who, after an incomplete intoxication, lost his memory totally, recovering only after eighteen months. The aphasia to which some writers have referred as present in some cases, would seem to be an amnesia rather than a true aphasia.

A marked reduction in the field of the emotions has been noted by a number of observers. A masklike expression has been spoken of, and an emotional tone of great indifference. Outbursts of irresistible tendency to laughter, spasmodic in character, have been noted in some cases with an apathetic indifference between the attacks. By the occurrence of thrombotic occlusions and hemorrhages, Mott thinks all of the nervous symptoms are to be explained. It is interesting to note that Mott was the first to notice the marked similarity between the brain of a soldier dead from shell shock, and the brain of a man dead from carbon monoxid poisoning.

There is a lack of observation in these cases continued over a period of years. Various psychoses and psychoneuroses have followed these poisonings but, since many of them have been deliberately suicidal attempts, it is not wise to conclude that any remaining mental aberration is solely due to carbon monoxid poisoning. Memory defect, however, stands out as the most constant and prominent of nervous symptoms due to this toxic agent, and to this Mott in his second lecture on the effects of high explosives as shown in the present war, calls particular attention, demonstrating from photographs the capillary punctate hemorrhages, found in the corpus callosum both in industrial and military cases. Photographs also show cell changes due to carbon monoxid poisoning. The subject, therefore, has also a side of military interest, as well as its industrial phases and its too common occurrence in our every day life.

3. O'Malley, Mary: Am. Jour. Med. Sc., June, 1913.
4. Le Dosseur, Louis: Thèse de Paris, 1901, quoted by O'Malley (Note 3).
5. Knapp, P. C.: Am. Jour. Insan., October, 1915.

ABSTRACT OF DISCUSSION

DR. JOSEPH BYRNE, New York: I would like to ask Dr. Hitchcock what his experience has been in blood transfusion, bleeding, etc., in these cases?

DR. G. A. MOLEEN, Denver: Carbon monoxid poisoning is more common than we are apt to believe. It occurs not only with the gas car, but also with the steamer, as one of the cases which I observed evidences. As to the results, some years ago Spiller and his associate reported a case which showed marked destruction, especially in the striate body, and some destructive lesions in the subcortical area, which probably accounts for some of the phenomena that have been described by Dr. Hitchcock, as well as by other observers. Referring to the blood changes and the combining of the carbon monoxid with hemoglobin, William D. McNally, who was speaking from Nicloux's work, said: "Carbon monoxid combines chemically with the hemoglobin of the blood to form a stable compound." This conclusion has been questioned and I believe disproved first by Haldane and second by Yandell Henderson, who says that carbon monoxid does not form a permanent compound with hemoglobin. In the presence of excess oxygen, or even of pure air, carbon monoxid is rapidly given off and the oxygen carrying power of the hemoglobin is restored. This is a very significant statement.

One case to which I wish to refer was that of a physician who, until September 13 last, was in good health. He went to the garage in which he had a steamer; the pilot light had been left burning over night, and he was found unconscious. He later presented the defects in memory which have usually been described, but the peculiar thing that remains at the present time is the fact that his memory seems to be, as it were, punched out. He can do work up to a certain point and then everything stops abruptly. He will go to the laboratory where he has done a great deal of work, start a urinalysis, get up to a certain point, stop there and walk out in the street, and on returning he has forgotten what he has done. The second case was one of rather severe carbon monoxid poisoning. The man started a car in the garage, having closed the door, to make some repairs. At the present time he has a very pronounced apraxia. In both these cases recovery has not taken place, and I am doubtful whether any case of a fair degree of carbon monoxid poisoning ever recovers fully.

DR. CHARLES W. HITCHCOCK, Detroit: In answer to Dr. Byrne's question, I have not seen any recent cases, so the matter of transfusion has not come up. One point mentioned by me is confirmatory of what Dr. Moleen has said with reference to the mode of operation of the poisoning. I quoted McNally as follows: "The corpuscle is not dead. All it needs is oxygen under sufficient tension to displace the carbon monoxid." One other point was mentioned, namely, that the amnesia may simulate the Korsakow syndrome. That is sometimes the case, and a tendency to confabulate appears. With reference to the organic changes, the memory defect stands out as the most constant and prominent of nervous symptoms due to this toxic agent. Mott in his second lecture on the effects of high explosives, calls particular attention to this, demonstrating from photographs the capillary punctate hemorrhages found in the corpus callosum, both in industrial and military cases. Photographs also show cell changes due to carbon monoxid poisoning. Therefore, the subject has a side of military as well as industrial interest. This type of accidental poisoning is an altogether too common occurrence in our everyday life.

The President on Child Labor During the War.—As the labor situation created by the war develops, I am more interested than ever, if that were possible, in throwing all the safeguards possible around the labor of women and children in order that no intolerable or injurious burden may be placed on them. I am, therefore, very glad indeed that the National Child Labor Committee is diligently continuing its labors and extending its vigilance in this important matter. By doing so it is contributing to efficiency and economy of production, as well as to the preservation of life and health. —Woodrow Wilson.

HEAT STROKE

WITH A SECOND STUDY OF CEREBRAL EDEMA *

PIERCE McKENZIE AND E. R. LeCOUNT, M.D.
CHICAGO

The meteorological conditions responsible for heat stroke are rare in Europe but common in the Mississippi Valley and states of the eastern and southern coasts of this country; in general, heat stroke occurs in river valleys and low lands.[1] Inability of the air about the body to receive any more moisture because it is already so saturated, together with a high temperature of the air, are chiefly responsible for heat stroke, and this applies equally well to heat stroke caused by exposure to the sun's heat and to heat stroke under other conditions, as in hot kitchens or boiler rooms. The "wet-bulb" thermometer determinations so essential to indicate this relation between increased humidity and temperature[2] are unfortunately no longer a part of our daily weather reports.

Less important causes are tight and heavy clothing and a too small intake of water, each preventing or lessening cooling of the surface by evaporation as well as adaptive changes in other heat-regulating activities of the body. Evidence that consumption of alcohol in beverages favors the development of heat stroke and increases the mortality has been advanced by Norton[3] and by Gauss and Meyer.[4] Further evidence regarding this relationship is needed and especially from carefully controlled experiments. There is no evidence that actinic, ultraviolet or other rays except those of heat, play any rôle in the causation of heat stroke from exposure to the sun's rays.[5] Aron[6] found that monkeys accustomed to tropical heat quickly died when exposed to the sun in still air; those in the shade of an umbrella or in the sun with a current of air from an electric fan suffered no damage.

The possibility of an infectious origin for heat stroke is discussed by Sambon.[7] Hedinger,[8] from study of the chromaffin organs of the bodies of two persons dead from insolation, has suggested that a predisposition may exist in their imperfect development.

Some writers[9] discuss the development of a poison as a consequence of the heat and altered metabolism, and liken it to snake venom, probably because hemorrhages in the skin and elsewhere are observed in heat stroke. Woolley[10] has suggested that this poison may be protein and incompletely split from loss of water, concentration of the tissue colloids and changed metabolism, and also that such substances (Vaughan's thermogenic protein poisons) may cause the high fever.

SYMPTOMS

When heat stroke occurs in hot boiler rooms (heat exhaustion) or other similar places, there may be dizziness, nausea and weakness before unconsciousness; the attack may come on slowly; when more severe, profuse sweating, dryness of the mouth, a red or purple discoloration of the skin, shivering, and a subnormal temperature or one of from 100 to 102 F. may precede death in coma.

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* From the Pathological Laboratory of Rush Medical College.
* This investigation was made possible by a grant from the Fenger Memorial Association. A former study of edema of the brain is: Nuzum, Frank, and LeCount, E. R.: The Ability of Brain Tissue to Take Up Water in Delirium Tremens and Other Conditions, THE JOURNAL A. M. A., Dec. 16, 1916, pp. 1822-1826.

* Owing to lack of space, this article has been abbreviated by omission of the bibliographic references. These appear in the authors' reprints.

A fibrillary twitching of the muscles, vomiting, slow pulse, a more abrupt onset, earlier coma and high temperature of the body (from 105 to 117) characterize heat stroke from direct exposure to the sun (insolation). In this condition the attack may be indeed a stroke without warning, and has been repeatedly observed in soldiers making a charge in great heat. The simpler classification is asphyxial and hyperpyrexial; Steinhausen[11] refers to comatose, epileptiform and convulsive forms as well as forms without loss of consciousness, an encephalitis variety and a form with delirium.

Edsall[12] describes instances in which generalized fibrillary twitchings and painful cramps of the muscles were the only outstanding features resulting from hot weather and classifies this condition as a separate disorder; some were sequelae.

Wiener[13] and Schmidt[14] among others have accounted for the higher mortality and greater severity of insolation by direct overheating of the scalp and other coverings of the cerebrum. An increase of cells in the cerebrospinal fluid, polymorphonuclear at first and mononuclear later, has been described by Dopter,[15] Huble and Pigache,[16] Dufour[17] and Römer.[18]

PATHOLOGIC ANATOMY

There has been a great deal of discussion[19] regarding the hyperemia of the brain and leptomeninges, partly because the conditions rapidly change postmortem, and observations have been made naturally at varying periods after death; also in part because the observations reported have been of different types of heat stroke and of the brain and its coverings with death at different periods after the stroke or prostration. The minute hemorrhages in the brain and these coverings are, no doubt, as fully responsible for the notice these structures have generally received, as any content-variation from normal of their blood vessels. In places where it usually is observed, cloudy swelling is found in organs of the trunk, with hyperemia; in the lungs, edema. The few gross changes[20] therefore, like the usefulness mathematically of negative values, support any contention of death from heat stroke.

Edema of the leptomeninges with varying amounts of cells in the transudate have led to the view by some[21] that there is a serous meningitis with heat stroke; the suppurative meningitis maintained by Römer[18] is unconfirmed by other observers. In the observations reported by Van Gieson[9] and Steinhausen[11] of microscopic changes in the brain, there is nothing characteristic of heat stroke, and as yet no general agreement regarding the alterations. In this connection changes found in the Nissl bodies by these observers deserve mention.

In postmortem examinations made by one of us of the bodies of thirty-seven persons who died of heat stroke, the following alterations were found quite regularly: edema of the brain or leptomeninges or both; marked generalized passive hyperemia, especially of the brain and lungs; edema of the lungs; hyperplasia of the spleen; cloudy swelling of the liver, kidneys, and myocardium, and petechial hemorrhages of the various mucous membranes and of the skin, with irregular and lessened yellow material of the suprarenal cortices.

Perhaps more interesting than other changes are the edema of the brain tissue and the enlargement of the spleen; many standard textbooks omit entirely mention of any change of the spleen. Norton,[3] in his three cases, mentions the spleen as "normal"; Packard[19] refers to it as "large and soft"; Hiller[19] as "now and then enlarged." Hemorrhages of the skin are common in that of the thorax, especially the sides below the axillae.

In all the thirty-seven, the cerebrospinal fluid was clear, colorless and usually increased. Edema of the brain alone was present in twenty-two; edema of the leptomeninges alone in nine; edema of the brain and leptomeninges in four; a foramen magnum pressure furrow of the brain stem in fourteen, and in three only hyperemia of the brain and leptomeninges. In two of the brains there were minute hemorrhages of the leptomeninges of the cerebrum, and in one barely visible hemorrhages of fresh surfaces made by sectioning the pons. These three had diagnoses of heat prostration. In these brains, after hardening in solution of formaldehyd[22] there was quite generally edema of the brain substance, hyperemia, especially of the white substance, punctiform red places due to hardened blood within minute vessels, and enlargement of the ventricles, especially the lateral; in some cases the lateral ventricles were 14 mm. in the greatest diameter at the anterior commissure, measured on segments made by coronal sections. In one brain, small softenings of the lenticular nuclei were found; the clinical diagnosis was heat stroke, and was well supported by the necropsy observations.

Because of the frequency and the seemingly marked edema of these brains, an attempt was made to learn the amount of water present with more accuracy: At the time of the postmortem examination, pieces were taken from the temporal lobes, one from each, and a separate estimate made for each. They were put separately into weighing bottles, the stoppers "locked" and the bottles and content placed in an icebox until weighed. After weighing, the tissue was removed to a bottle containing redistilled 95 per cent. alcohol equal to two or three times the volume of tissue, and the tissue was then cut into small pieces. The weighing bottles were then weighed empty.

The water content of each specimen was estimated according to the method of Koch and Voegtlin[23] which, briefly, is as follows:

> The tissue transferred to a dried, weighed filter-paper cup is extracted in a Soxhlet apparatus with redistilled 95 per cent. alcohol for from four to six hours, and this followed by extraction with redistilled ether for from two to six hours. It is then ground to a powder in a glass mortar. This powder is digested with 50 c.c. of hot distilled water on a water bath for fifteen minutes. This digestion is repeated four times. The water extracts are evaporated to about 20 c.c. and added to the wet powder with enough redistilled alcohol to make a 75 to 80 per cent. concentration and, after boiling to precipitate the water-soluble proteins, the solids are again transferred back to the filter-paper cup and extracted with redistilled 95 per cent. alcohol for from twelve to eighteen hours. The residue and the cup are dried at 105 C. in an oven to constant weight. All the filtrates and extracts are evaporated together in a weighed beaker and dried to constant weight in a vacuum desiccator. The sum of the two gives the weight of the solids. Subtracting this from the fresh tissue gives the weight of the moisture, from which the percentage is calculated.

It is known that the gray matter of the brain normally contains a higher percentage of moisture than the white,[24] and it has been found in experiments on swelling of the brain substance that the gray and white matters swell differently.[25] The need of studying the hardened brains, as well as technical difficulties of

estimating the water of the entire brain, led to taking only similar portions of each brain. The close agreement in water content found in the portions from each side of so many brains indicates a similarity of amount of gray and white matter on each side.

TABLE 1.—PERCENTAGE OF MOISTURE OF BRAINS OF PERSONS KILLED BY ACCIDENT (1917) *

No. of Brain	Clinical Diagnosis	Time in the Hospital	Approximate Hours after Death before Necropsy	Percentage of Moisture
1	Crushing injury and amputation of the left leg; traumatic fracture of the first thoracic vertebra	5 hrs.	22	78.05
2	Crushing injury of the trunk.....	1 hr., 30 min.	15	79.38
3	Fracture of ribs; death in 10 min.	10 min.	18	79.99
4	Gunshot wound of the abdomen	1 hr., 50 min.	16	79.76
5	Gunshot wound of the trunk.....	None	Unknown	80.65
6	Gunshot wound of a lung, the liver and innominate vein	None	Unknown	80.50
7	Gunshot wound of the neck, spine and spinal cord	None	Unknown	79.41
8	Gunshot wound of the trunk.....	None	7	78.56
9	Gunshot wound through the aorta	7 min.	12	80.30
10	Gunshot wound of the chest.....	None	23	80.50

* The average of the weights of the pieces of brains from persons killed by accident is 43.425 gm. The average of the percentage of moisture of the two pieces taken from each brain is given.

All of the brains studied were from adults. For comparison, similar portions of brains of adults dead from accidents or crime when death came shortly after violence were examined in a like manner. An average of the percentage of water for these similar portions of control brains is 79.7 per cent. (Table 1). Some of these control estimates were from the brains of persons who had lost a great deal of blood; and with anemia there is edema of the brain. Notwithstanding this factor, the water content found agrees very well with the results given by others for the normal brain,[26] considering also that their estimates are of the brain as a whole. As a dividing line it may be safely said that a percentage of moisture above 80 per cent. may be taken as above normal.

From the average weights of brains of Europeans between 20 and 80 years old, as found by twenty-six investigators working independently, Vierordt[27] gives as the average weight of the brain of a man, 1,357 gm., and of a woman, 1,235 gm. Therefore, 1 per cent. of difference in the water content of brains equals with brains of men about 13.5 gm., with those of women, 12 gm. With a 2 or 3 per cent. increase of moisture content of the brain in disease, if it does not replace other fluid, that is, if there is hyperemia of the brain and meninges and internal hydrocephalus as well, it is very likely that compression occurs, with disturbance of function of first the cortical centers, and then the medullary; 3 per cent. is more than 1 fluidounce, and the brain, unlike most viscera, has a firm wall about it.

The cases of heat stroke of 1916[28] are regularly of high water content (Table 2). Of the sixteen brains estimated, thirteen have a gross diagnosis of marked edema of the brain. Of the latter, nine patients died en route or shortly after admittance to the hospital and their temperature is unknown, except in one, in whose case it was 110 F. One of the remaining seven was in the hospital two and a half days with a maximum temperature of 109 F., the others from one to seven hours and with temperatures of from 110 to 111 F.

Of the heat stroke brains of 1917 (Table 3), for only one was there a high water content, for three a moderate increase, and for the other two the water content was within normal limits, apparently. The heat of 1917 was not as severe as in 1916. With fewer such patients in the wards and, in general, more hours in the hospital for the individual, the treatment may have lessened the moisture content of the brain; perhaps more resistant individuals were affected.

Numerous contributions to and reviews of the subject make it unnecessary to attempt here any direct application of the results of this investigation to what is perhaps inaptly termed "acidosis." The results seem to confirm the impression gained by finding, soon after death and by opening the head first, the brain swollen with flat convolutions and tightly closed sulci, the arachnoid meshwork obliterated, and the parietal and visceral layers of the arachnoid in intimate contact. This condition, always most marked on the vertex and sides of the cerebrum, as already stated is not invariably found with heat stroke; it is perhaps less constant than hyperplasia of the spleen. It does, however, deserve a place with the minute hemorrhages and especially those of the skin, as one of the conspicuous alterations.

TABLE 2.—PERCENTAGE OF MOISTURE OF BRAINS OF PERSONS KILLED BY HEAT STROKE (1916) *

No. of Brain	Clinical Diagnosis	Time in the Hospital	Approximate Hours after Death before Necropsy	Percentage of Moisture
11	Heat stroke.....	45 min.	15	83.56
12	Sick three days before he was brought to the hospital; examining room diagnosis of typhoid	7 hrs.	17	81.91
13	Heat stroke; acute alcoholism...	11 hrs.	6	82.58
14	Heat stroke.....	Unknown	Less than 24	81.83
15	Heat exhaustion.....	7 hrs.	17	83.78
16	Heat stroke.....	1 hr., 15 min.	13	82.85
17	Heat prostration.....	Died on admission	14	81.16
18	Heat stroke.....	5 hrs., 30 min.	12	81.26
19	Heat prostration.....	2 hrs.	3	81.61
20	Delirium tremens.....	2 days, 16 hrs., 30 min.	24	82.91
21	Fell off a wagon while drunk.....	None	19	81.32
22	Brought in dead.....	None	Unknown	81.32
23	Died in the ambulance on the way to the hospital	None	9	82.63
24	Heat prostration.....	Died on admission	11	82.27
25	Heat exhaustion.....	10 min.	17	83.27
26	Found sitting in a doorway overcome by heat (police record)	None	Unknown	83.42

* The average weight of the pieces of the heat stroke brains of 1916 estimated is 11.381 gm.

There are, however, in medical literature two observations which should be mentioned in connection with these results. One is the experimental production of high temperatures in dogs by Woodyatt[29] by dehydrating the animal by means of continuous injections of glucose. He says:

28. During the summer of 1916, according to the Chicago Daily News Almanac and Year Book and the Bulletin of the Chicago Department of Health, 535 persons died in Chicago of heat stroke, and this between July 15 and September 16. In 1917, thirty-three persons died of heat stroke all between July 28 and August 25. In reports for 1916 and 1917 of the United States Department of Agriculture, Weather Bureau, Monthly Weather Review, the records of both the wet thermometer and the ordinary heat thermometer are highest when the greatest number of heat strokes occurred.

By pushing matters it is possible to produce definite rigors and fever as high as 108 F., but unless the dehydration is carried too far, the chills, fever, shaking and hyperpnea all disappear when the body weight is brought back to the proper level by adding water. . . . The fever can be made to appear and disappear at will by changing the water level, . . . but water need not leave the body. It can be bound with sugar or salt molecules or by protein within the body. The suggestion is that one fundamental factor in the maintenance of a uniform body temperature is the maintenance of a constant water concentration in whatever body fluids function in a way comparable to that of the salt solution phase in the system mentioned.

The other observation,[30] one made by Maud Menten, is an increased hydrogen-ion concentration of the blood with low barometric pressure, that is to say, with heated air or moisture-laden air or both.

PROPHYLAXIS AND TREATMENT

In addition to such usual recommendations as a diet largely of carbohydrates, low in calories, with less of fats and proteins; the use of light, loose clothing and abstinence from alcohol; and to protect the head and avoid extreme muscular exertion in hot and humid air, emphasis should be made of the value of drinking water in the prevention of heat stroke. Hunt[31] states that three gallons of water are required by a man working on a hot day in the sun. Troops marching in the sun on a hot breezeless day will be less likely to suffer from heat stroke if marching in open rather than in close formation.

TABLE 3.—PERCENTAGE OF MOISTURE OF BRAINS OF PERSONS KILLED BY HEAT STROKE (1917) *

No. of Brain	Clinical Diagnosis	Time in the Hospital	Approximate Hours after Death before Necropsy	Percentage of Moisture
27	Heat prostration	11 hrs.	7	81.62
28	Heat prostration	1 hr.	3	80.15
29	Heat prostration; delirium tremens	6 days, 15 hrs., 30 min.	6	80.11
30	Heat prostration	2 hrs., 15 min.	15	79.46
31	Heat prostration	4 hrs.	12	79.94
32	Heat prostration	10 hrs.	5	80.37

* The average weight of the pieces of the heat stroke brains of 1917 estimated is 35.061 gm.

When the attack is not severe or in early stages, removal to a cool place may be all the treatment necessary. With collapse and a subnormal temperature, heat externally and massage are advised. With hyperpyrexia, ice and ice-water are used in a variety of ways. A favorite method is to cover the stripped patient on a stretcher with a sheet kept cold by pieces of ice and by pouring ice-water over it. When the thermometer kept in the rectum indicates 103 or 104 F., the patient is removed to bed, wrapped in a blanket, and the temperature watched. Ice-water enemas may be used; also a spray of ice-water on the back. Camphorated oil and other cardiac stimulants may be useful. Physiologic sodium chlorid solution subcutaneously was employed by Lewis and Packard,[32] but they were not convinced of its great value. They found that removal of from 10 to 18 ounces of blood from patients after the temperature was reduced was often followed by improvement.

Woolley[33] advises solutions of sodium chlorid and carbonate in water rectally and intravenously. In those cases in which the symptoms have continued for days with coma, spinal puncture has been done with good results.

Military Medicine and Surgery

VISUAL REQUIREMENTS OF THE UNITED STATES NAVY *

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The visual requirements of the Navy may in general be said to be more severe than those of the Army. At the same time they are simpler and more definite, both because of the much narrower latitude allowed for correction by glasses and because they are more categorical, since such requirements readily lend themselves to categorization through a consideration of the various branches and ratings of the service.

Also the visual requirements of the United States Navy may be said to be more severe than those of other countries having large navies, since conditions governing the physisical requirements in the larger foreign navies are necessarily different from our own. In only one, that is in the British navy, does the system of voluntary enlistment prevail. In others, the recruits are subjects of a universal draft system, the sea-faring districts furnishing conscripts so far as needed for the navy, recruits from other districts going to the army.

For a proper appreciation of the visual requirements of the various ratings, it is necessary to have clearly in mind the different branches of the service and the duties involved therein. The enlisted men of the Regular Navy and of the Reserves, for the most part included under the United States Naval Reserve Force, may be classified in three main branches: (1) the seaman branch, which includes those directly responsible for navigating the ship and manning the guns; (2) the artificer branch, such as machinists, electricians, carpenters, plumbers, blacksmiths and firemen, and (3) the special service branch, which includes the yeoman or clerical service, hospital corps, musicians and cooks, also those rated in the radio service and aviation service besides the Marine Corps.

Commissioned officers, both regulars and reserves, are divided into officers of the line or those in charge of matters of navigation, executive command and similar duties and officers of the staff including medical officers, constructors, civil engineers, the pay corps and chaplains.

It is well to recall also the expansive effect on the personnel of the Navy of the present war, significant of which is the fact that any tendency to lower the standard of visual and other physical requirements is naturally to be traced to expanding the forces more rapidly than volunteers measuring up to full standard requirements can be obtained.

The declaration of war, April 6, 1917, found us with a total enlisted strength of 65,000 in the Navy or including the Marine Corps, 82,738. We now have approximately 400,000 officers and men in the various branches of the Navy, all volunteers.

* Read before the Section on Ophthalmology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

Notwithstanding the fact that the complement of the Navy has been increased to more than four times its original number and that still greater expansion is anticipated in the immediate future, no relaxation in the standard of visual requirements of the Regular Navy has been ordered and at present no such relaxation is contemplated. The same is true of the Reserves except for a certain class of men enlisted for shore duty to be noted later.

The visual requirements of the Regular Navy and Marine Corps may be thus summarized (unless otherwise stated, all vision values are without correction with glasses): Recruits for enlistment in the Navy including the Marine Corps are required to have normal vision, or $^{20}/_{20}$ for each eye, but in candidates who are otherwise physically sound a minimum visual acuteness of $^{15}/_{20}$ will suffice. Color vision must be normal. Various abnormal conditions are given as causes for rejection, such as trachoma, pterygium, strabismus and others which need not be fully enumerated here.

Candidates for admission to the United States Naval Academy are required to have $^{20}/_{20}$ vision in each eye, without the aid of glasses, and the regulation states that there shall be no deviation from this rule.

For the Medical Corps, Dental Corps, civil engineers and for chaplains there must not be less than $^{13}/_{20}$ for each eye, unaided by glasses and capable of correction by glasses to $^{20}/_{20}$. The eyes must be free from disease and color vision normal. For line officers and the pay corps, there must not be less than $^{15}/_{20}$ for each eye, unaided by glasses and capable of correction by glasses to $^{20}/_{20}$. For officers of the Marine Corps, $^{18}/_{20}$ for each eye, unaided by glasses and capable of correction by glasses to $^{20}/_{20}$. Normal color vision is required. The foregoing applies to regular and, in general, to reserve officers.

In the case of officers for promotion, the vision, hearing and other functions must be such as, in the opinion of the board, will enable such officers to perform efficiently their duties at sea.

In the Navy Nurse Corps (female), no specific requirements are observed beyond what is necessary in the opinion of the examining surgeon for proper performance of the work required, the same being subject to approval by the department.

In individual cases, in which the candidate may fall slightly below the standard required by the regulations, and where, in the opinion of the medical recruiting officer, he presents unusual qualifications otherwise, a request for a waiver of the defect may be submitted to the department which will assume the responsibility of the decision in such cases.

In addition to the foregoing, there are certain exceptional requirements for special duties specified, some of which are more liberal, others more rigid than the usual requirements. Under the more liberal requirements, it may be noted that applicants for service in the Naval Reserve Force who would otherwise be ineligible for enlistment may be accepted for special duty in Class 4, for service which involves shore duty only. Here the visual requirement is that which, in the opinion of the examiner, is required in any given case for the applicant properly to perform the duties of the position or rating to which he is to be assigned. Thus it is possible during the emergency to enlist for temporary service large numbers for duty at naval stations, navy yards and elsewhere for shore duty as barbers, cooks, tailors, shoemakers and for similar occupations, in this way releasing a corresponding number of more standard men for sea duty. Except as noted, the visual requirements for Reserves are the same as for Regulars. In the entire seaman branch, the requirements are the same.

Examples of special duties, in which there are more rigid requirements, are those of aviators and gun pointers already enlisted, who must pass special examinations to be eligible for these duties.

The visual requirements for aviators, which are the same as those for aviators in the Army, namely, $^{20}/_{20}$ in each eye, with eyes otherwise normal, need not be further discussed here.

For gun pointers, the visual requirements are more severe than for any other class of duty, and the regulation which has been in force since 1908 requires that the candidate for such rating shall have $^{20}/_{15}$ vision in the right or aiming eye and at least $^{20}/_{20}$ in the other eye. A test of the visual acuity of qualified pointers is made before each target practice and the result entered on the record, a report being also sent to the department.

In this connection, it is interesting to recall some features of an investigation carried out in the winter of 1911, at Guantanamo Bay, Cuba, by E. J. Grow, Medical Inspector, U. S. N., with the view of determining the relation of visual acuity to actual shooting and whether the gun pointers and trainers should be selected with more consideration as to vision than was then required.

To appreciate just what is required in the way of vision in aiming large guns, it may be well to recall that the telescopic sights used include a proper lens system and in addition a glass on which are etched two lines crossing at right angles, one vertical, the other horizontal. Accurate aiming implies that both of these lines be seen in sharp focus by the observer. This will not be possible if there is any considerable degree of astigmatism present in the observing eye, The blurring of one of the cross lines may in such a case be so great that it will appear double. Another source of error, if astigmatism be present, is an ocular parallax between the object aimed at and the cross lines.

Experiments by Grow showed that the presence of an amount of astigmatism under 0.75 diopter could be considered a negligible factor in so far as it concerns accurate perception of the telescopic cross lines and the matter of ocular parallax. The records of the vision tests also showed that $^{20}/_{15}$ vision practically eliminated the chance of any one having over 0.37 diopter of astigmatism, which is to be considered a perfectly safe amount for the purposes here considered.

Myopia was not found in a single instance among the 270 gun pointers examined, as was to be expected, since all myopes would be eliminated by the requirement of $^{20}/_{15}$ vision, as well as by the fact that a myope would be eliminated in any target practice.

With hyperopia, it is entirely different, since a man may have much or little of this error of refraction and still satisfy the $^{20}/_{15}$ visual standard. A marked amount of hyperopia is undesirable in a gun pointer, since in the stress of practice or in actual battle, the vision may become blurred from relaxation of the accommodation. Three men out of the 270 examined were found to have 4 diopters of hyperopia, all three of whom had complained of their eyes being tired and vision blurred during target practice. Grow con-

siders that 3 diopters of hyperopia or more should cause rejection of any one as a gun pointer.

He concludes that a visual acuity of $^{20}/_{15}$ will in a simple and practical way eliminate all cases of astigmatism and myopia which by any chance would interfere with the most accurate aim which is possible to be obtained through telescopic sights. "Plenty of men," as he says, "can be obtained who have this vision. Nothing is to be gained by a higher visual requirement."

A comparison of the visual requirements of the navies of all the principal belligerent countries before and since the beginning of the war would be at this time interesting and instructive, but with the exception of France and of some meager data concerning the requirements of the British navy it has not been found practicable in the length of time at disposal to obtain the data required for such a study; this because of the difficulty of foreign correspondence under present conditions. A search of periodical and other literature was disappointing.

Visual requirements for the French navy were revised in the latter part of 1915, when it was announced that owing to appreciable loss in recruiting due to more or less rigid requirements certain reductions would be made in ranks other than pilots, helmsmen, signalers, canoneers, artificers, armed seamen and buglers. In comparing the French prewar and present visual requirements, together with those of the U. S. Navy, the following may be noted. For the sake of clearness, the French standard expressed in fifths is here reduced to its equivalent in the $^{20}/_{20}$ standard.

Fig. 1.—Grow "unlearnable" vision test card.

Helmsmen and lookouts: $^{20}/_{20}$ in each eye, prewar and present, which is slightly above the U. S. Navy standard of $^{20}/_{20}$ with a minimum of $^{15}/_{20}$ in exceptional cases.

Pilots above normal: $^{20}/_{15}$, prewar and present, which is also above our requirements of $^{20}/_{20}$, with a minimum of $^{15}/_{20}$ in exceptional cases.

Torpedo men: French prewar standard, $^{20}/_{20}$ each eye; present standard, $^{20}/_{20}$ in one eye, $^{8}/_{20}$ in the other, U. S. Navy, $^{20}/_{20}$ with a minimum of $^{15}/_{20}$.

Fusileers (corresponding to our marines): prewar, $^{20}/_{20}$ in right eye, $^{12}/_{20}$ in left; present, $^{20}/_{20}$ and $^{8}/_{20}$. U. S. Navy, $^{20}/_{20}$ in both eyes; exceptionally, $^{15}/_{20}$.

Hospital corpsmen: French prewar, $^{16}/_{20}$ and $^{12}/_{20}$; present $^{12}/_{20}$ and $^{4}/_{20}$. U. S. Navy, $^{20}/_{20}$; minimum, $^{15}/_{20}$.

Firemen, carpenters, tailors, sailmakers, buglers and members of the band: French prewar, $^{12}/_{20}$ and $^{8}/_{20}$; present, $^{12}/_{20}$ and $^{4}/_{20}$. U. S. Navy, $^{20}/_{20}$; minimum, $^{15}/_{20}$.

Gunners: French prewar, $^{20}/_{20}$ and $^{12}/_{20}$. U. S. Navy, $^{20}/_{15}$ in aiming eye; $^{20}/_{20}$ in the other.

The French prewar requirements are not at hand for the following ratings, but the present standards may be compared with those of the U. S. Navy as follows:

Apprentice seamen, seamen first and second class: French, $^{20}/_{20}$ and $^{12}/_{20}$. U. S. Navy, $^{20}/_{20}$; in exceptional cases, $^{15}/_{20}$.

Candidates for the Naval Academy: French, $^{12}/_{20}$ and $^{8}/_{20}$. U. S. Navy, $^{20}/_{20}$ in each eye; no deviation.

Medical Corps, civil engineers, pay corps, yeoman school, departmental officers: French, $^{12}/_{20}$ and $^{4}/_{20}$. U. S. Navy, $^{12}/_{20}$ in either eye; correctable to $^{20}/_{20}$.

In regard to glasses in the French navy, it is stated that glasses are unacceptable in the service of the fleet.

The visual requirements of the British navy in force before the present war required for men of the deck crew and for naval cadets full normal vision as determined by Snellen's tests. Since the war, candidates have been accepted in the Royal Naval Volunteer Reserve with $^{20}/_{20}$ in one eye and $^{19}/_{20}$ in the other. Thus the British prewar requirements were practically the same or slightly more severe, if rigidly enforced, than those of the United States, but since the war have been somewhat less rigid for the class of men noted.

Candidates for other branches than the deck crew and naval cadets must not have less than $^{6}/_{60}$ ($^{3}/_{20}$) in each eye, which must be correctable by glasses to normal vision. This is considerably below the requirements of the U. S. Navy for men of corresponding ratings.

A question sometimes raised is, To what extent should the wearing of glasses be permitted in naval service? The wearing of glasses by the deck crew of the seaman branch is not practicable, because of fogging of the glasses from sudden temperature changes, fog and spray, and is not routinely permitted. Among men of other ratings, such as yeomen, men in the pay department, and cooks, there is not the same objection, provided the glasses are worn to avoid the discomfort incident to small or moderate errors of refraction and provided the person would not be incapacitated for duty in an emergency, if deprived of his glasses, for it must be remembered that all men on ship board have their assigned battle quarters regardless of rating, and a person who would be helpless for his assigned duty in case of sudden breaking or loss of glasses during battle would be an undesirable member of the organization. This problem, however, is eliminated as one of practical importance by the visual standard required in recruits, since no one with $^{20}/_{20}$ vision, or even $^{15}/_{20}$ allowed in exceptional cases, will be entirely dependent on glasses. In individual cases the advisability of allowing glasses to be worn is determined by the medical officer in charge.

The method of taking and recording the vision in the navy differs in some respects from that generally used in examinations for the army and industrial institutions. According to the regulations, "Vision is to be expressed as a fraction, of which the numerator shall be the distance at which Snellen's 20-foot test can be determined and the denominator 20." The candidate, one eye being covered, stands before the card at a distance of 20 feet. If he cannot read the Snellen 20-foot letter at that distance he walks forward until he can just do so, the distance at which he can just read the 20-foot letter being, as before stated; the numerator of the fraction expressing the visual acuity.

In 1910, Medical Inspector E. J. Grow, then instructor in ophthalmology in the U. S. Naval Medical School, published a description of the "unlearnable" vision test card devised by him, which has been since then in universal use in the Navy. Grow was led to devise such a card by the following considerations: (1) There is no one absolute standard observed by publishers of Snellen test type, and the

cards of various publishers varied to such an extent that in the case of the line which should be seen at 20 feet ($^{20}/_{20}$) line, there is a variation in the different charts from 7.4 mm. square to 10.6 mm., as a maximum. Such a variation would make a vast difference whether a candidate, slightly defective in vision, was tested by a card constructed according to the latter or former measurement. (2) The remarkable extremes to which candidates would go to enable them to pass the visual requirements, especially when a life occupation was at stake, simply because they lacked by 3 or 4 feet the ability to read the test letters at the required distance, included the memorizing of the various cards in use such that with the large letter at the top as a key letter candidates would be able to call off all the other letters

The card contains a series of test letters which subtend an angle of 5 minutes vertically and horizontally at the nodal point of the eye at 20 feet, thus fulfilling Snellen's principles required by the regulations. For the purpose of recording better vision, as, for example, among gun pointers when $^{20}/_{15}$ vision is required in the sighting eye, an additional line proportionally smaller is added.

The card is mounted in a frame which includes a movable cover containing a vertical and a horizontal slit, by changing the position of which various combinations of letters are brought into view. The card can also be conveniently used unmounted, a piece of card board with a slit in the same being held in the examiner's hand serving to cover all lines on the card except the one being used as a test. The use of a single type of card by all medical officers in the service makes for consistency of visual records, and this type of card has proved otherwise eminently satisfactory.

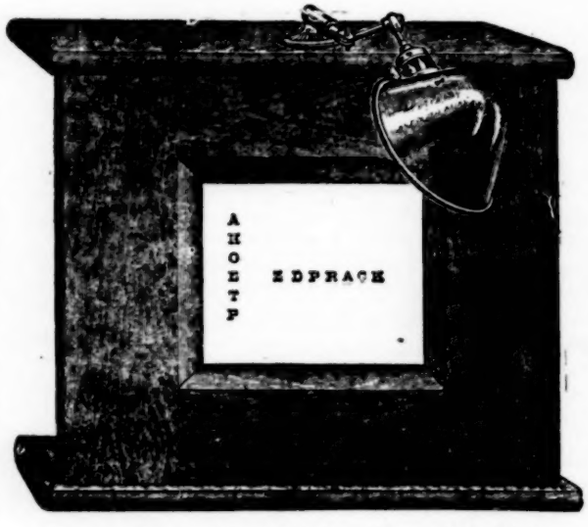

Fig. 2.—Glow "unlearnable" vision test card in cabinet.

In conclusion, it may be said that the visual requirements of the United States Navy are in general more strict than are those of other leading navies.

There have been no changes, since the beginning of the war, in the regulations governing the visual requirements of the U. S. Navy, and none are anticipated as being necessary or advisable at present or in the immediate future. Notwithstanding the considerable increase in the complement of the Regular Navy and in the Naval Reserve Force and the still greater expansion anticipated in the Reserves, there is, at present, no indication of serious danger of lack of the necessary volunteer recruits who may be enlisted under standards now in force.

In this connection, we may quote a recent announcement of the department. The question arose as to whether men who, while no longer potentially fighting men, would still be able to render limited service should be retained in the service or be discharged by survey. The matter was referred to the Bureau of Navigation, which announced its decision: "The Bureau of Navigation does not wish to adopt the policy of retaining men who are physically unfit for duty in the Navy but feels that these men should be given their discharge."

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VISUAL STANDARDS OF THE UNITED STATES ARMY *

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The visual requirements for the soldier of the United States Army were formerly normal vision, or $^{20}/_{20}$.

Investigations of Bannister and Shaw tended to show that with a vision of $^{20}/_{40}$ or even $^{20}/_{70}$ a clear enough vision of the bull's eye of a target could be obtained to enable the soldier to shoot with a fair degree of accuracy, and that if one eye possessed $^{20}/_{40}$, this was sufficient. As a result of these investigations the requirements of vision in the Army were changed so as to read:

1. For the line of the Army and for the Signal Corps: $^{20}/_{40}$ for the better eye and $^{20}/_{100}$ for the poorer eye, provided that no organic disease exsits in either eye.

Recruits may be accepted for the line of the Army when unable with the better eye to correctly read all of the letters on the $^{20}/_{40}$ line, provided they are able to read some of the letters on the $^{20}/_{30}$ line.

2. For the Ordnance Department and for the Hospital Corps: $^{20}/_{70}$ in each eye if correctable to $^{20}/_{40}$ with glasses, provided that no organic disease exists in either eye.

The contention was made by Army officers who had made a careful study of the subject that in accurate shooting the bull's eye of the target should be clearly and distinctly seen while the front sight appears slightly blurred in the center of a much blurred rear sight.

To quote from Colonel Havard:[1]

> The ability to correctly estimate distances, under all circumstances, forms an important element in the education of the soldier, and is indispensable to become a good shot. It implies the power, as one changes position, to perceive differences in the clearness, color and shape of topographical features, details of uniform, moving bodies, etc. This is impossible for any one with a $^{20}/_{40}$ vision in the right eye and possibly a poorer one in the left eye. Shooting may be an act of monocular vision, but in all situations where a quick and accurate estimate of distance, speed and direction is necessary, binocular vision is indispensable. . . . Therefore, although it may be necessary at times to enlist applicants with vision below $^{20}/_{20}$ in order to obtain a sufficient number of recruits, the normal binocular vision should remain the standard and be required whenever possible.

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* Read before the Section on Ophthalmology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Havard, Valery: Manual of Military Hygiene, New York, William Wood & Co., 1909.

In the present great emergency a large number of recruits is needed, and of these a large percentage will not be needed for the firing line, but for the multifarious duties connected with all branches of the military service. Hence the visual requirements have been still further modified by the Selection Service Law of May 18, 1917, and by the Selective Service Regulations prescribed in the Manual of Instruction for Medical Advisory Boards, Feb. 14, 1918. These Regulations for Recruits in the National Army are as follows:

Accept for general military service:

Vision $^{20}/_{100}$ in one eye, and $^{20}/_{40}$ in the other, without glasses, or $^{20}/_{100}$ in each eye, without glasses, if correctable with glasses to $^{20}/_{40}$ in either eye.

Accept for special and limited military service:

$^{20}/_{200}$ in one eye and $^{20}/_{40}$ in the other (either right or left) without glasses, or $^{20}/_{200}$ in each eye without glasses if correctable with glasses to $^{20}/_{40}$ in either eye. Hence a registrant is unconditionally rejected whose vision is below $^{20}/_{200}$ in each eye without glasses, or whose vision is not correctable to $^{20}/_{40}$ in one eye with glasses; or by inference, who has vision in one eye below $^{20}/_{200}$, even if the other has $^{20}/_{40}$ or better.

In different branches of the service, different degrees of visual acuity are required:

1. For officers of the Medical Corps and Medical Reserve Corps: Right, $^{20}/_{100}$; left, $^{20}/_{100}$, corrected to $^{20}/_{20}$ in both.
2. For the Ordnance and Hospital Corps: Right, $^{20}/_{70}$; left, $^{20}/_{70}$, corrected to $^{20}/_{40}$ in both.
3. For line and Signal Corps: Right, $^{20}/_{40}$; left, $^{20}/_{100}$; no correction required.
4. For Army Field Clerks: Right, $^{20}/_{70}$; left, $^{20}/_{70}$, correctable to $^{20}/_{40}$ in each.
5. For Aviation Section, Signal Corps: $^{20}/_{20}$ in each eye without correction.

Since the preparation of this paper there has been issued, through the office of the Provost Marshal-General, Form 75, revised regulations concerning "standards of physical examination governing the entrance to all branches of the armies of the United States."

No change has been made in visual requirements from those noted above except in regard to men accepted for special and limited service.

The requirements remain the same as before for this class, but there has been added Section 21 (*b*) which provides that men otherwise mentally and physically fit may be accepted for special and limited military service with "blindness in one eye with normal vision in the other eye without glasses." There is no qualification as to the degree of blindness, and it may be inferred that one eyeball may be absent if the other has normal vision.

The visual requirements in the armies of our allies, especially those of England and France, differ widely from our own, as will be seen by comparison.

VISUAL STANDARDS OF THE BRITISH ARMY

Prior to the War.—With vision in each eye of $^{20}/_{80}$ or better without glasses, the recruit was accepted as "fit."

With vision of $^{20}/_{20}$ in the right eye without glasses, and not less than $^{20}/_{200}$ in the left eye without glasses, the recruit was considered "fit."

With vision of $^{20}/_{20}$ in the left eye without glasses and not less than $^{20}/_{200}$ in the right eye without glasses, the recruit was considered fit for the Signal Corps, Medical Corps, Ordnance Corps and for drivers of artillery and engineers.

War Time Standards.—Since the war began the men have been graded into classes, from Class A, or those fit for general service, through other classes indicating limited service according to the physical qualifications of the men. These various classes have been called categories and designated by A, B, C, D and E.

Men in Category A are wholly fit for any service.

Men in Category B are fit for service abroad at the bases or on the lines of communication, but not fit for general active service.

Men in Category C are fit only for home service.

Men in Category D are temporarily unfit for higher classification, but likely to become fit within six months.

Men in Category E are unfit for further service, and are waiting for discharge.

Attempts are continuously made to fit those men in the lower classes by treatment, training, etc., for places in the higher classes, and the soldier is therefore subject to reclassification at any time into a higher or lower category.

The requirements of vision for Category A, general service, are $^{20}/_{80}$ in one eye, and at least sufficient vision in the other to count fingers and to get about. It must be possible, however, to bring the vision of the right eye to $^{20}/_{40}$ with glasses, and there must be no organic disease in either eye. All men whose vision is less than $^{20}/_{40}$ must be examined by the eye specialist. In Category B I are placed men for garrison service overseas who have vision of $^{20}/_{40}$ in the right eye (if myopia does not exceed 7.50 diopters), and any vision at all in the left eye, or even nothing, if there is no active organic disease.

In Category B II, labor battalions overseas, are placed men who are unable to shoot, vision with glasses less than $^{20}/_{40}$ or with myopia exceeding 7.50 diopters, whose eyes are free from orgainc disease.

In Category B III, sedentary service overseas, are placed men who have about the same vision as in B II; but these men must be able to use the eyes for near work, such as clerical work.

In Category C I, garrison service at home, are placed men with same vision as those in B I, vision of $^{20}/_{40}$ in the right eye and anything or nothing in the left eye.

In these cases there may exist some quiescent corneal or other lesions which might recur and be aggravated by exposure to the irritation of light, heat, sand or dust likely to be encountered in field service abroad.

In C II and C III, labor or sedentary service at home, the visual requirements are the same as in B II and B III, and retention at home depends on the general physical condition of the man.

Generally speaking, no man is placed higher than B II if he has myopia of more than 7.50 diopters, because it is assumed that B I men may be called as supports to the firing line in times of emergency; and if the glasses are lost or broken, these men will be helpless, and might not be able to distinguish friend from enemy.

Squint cases go into Category A if the right eye has the necessary acuity, $^{20}/_{80}$ correctable to $^{20}/_{40}$. If the left is the useful eye, they are placed in B II.

STANDARDS FOR CANADIAN EXPEDITIONARY FORCE AND ACTIVE MILITIA OF CANADA

Category A for the infantry, artillery and cavalry: Standard I: $^{20}/_{80}$ or better in each eye without glasses.

Standard II: $^{20}/_{80}$ with right eye and $^{20}/_{200}$ with left eye without glasses.

Standard III: $^{20}/_{80}$ in one eye without glasses if the right eye can be brought up to $^{20}/_{40}$ with glasses.

Category B: Skilled railway employees, army medical corps, ordnance corps, forestry, construction and labor, drivers of artillery or engineers: $^{20}/_{200}$ in right eye and not less than $^{20}/_{80}$ with the left eye without glasses.

If one eye is amblyopic or blind from traumatic cataract, scar tissue or other local condition, provided this is not due to general constitutional disease, and the other eye has $^{20}/_{60}$ or better, the man is placed in Category B I.

VISUAL STANDARDS OF THE FRENCH ARMY

It is said that the standards of the Belgian Army are practically the same as those of the French.

1. For the armed service there is required visual acuity of $^{20}/_{40}$ in one eye and $^{10}/_{200}$ in the other, and this may be

obtained by the use of lenses correcting myopia, hyperopia or astigmatism.

2. For the auxiliary service are accepted those who have vision in either eye correctable to $^{20}/_{80}$, the other being below $^{10}/_{200}$ or even completely abolished.

However, men with myopia exceeding 8 diopters, even if the correction of the error of refraction gives them $^{20}/_{40}$ or better, are placed in the auxiliary service, provided the myopia is not accompanied by serious choroidal lesions. Men who have lost one eye and who can comfortably wear a prosthesis can be admitted to the auxiliary service if the vision of the other eye can be brought to $^{20}/_{80}$ or better with glasses, provided that in the case of myopia it does not exceed 8 diopters.

COMPARISON OF THE VARIOUS STANDARDS

A comparison of these standards shows that so far as visual requirements go, England, Canada, France and Belgium will be able to take into the military service a larger proportion of men of military age than will the United States. Unquestionably, with our present standards modified as they have been in the recent Selective Service Regulations, we are losing for military service many valuable men who, aside from their slight visual defect, are otherwise physically fit.

I wish to call attention to one condition that it seems to me should be recognized in our system of visual standards, especially in these war times. I refer to the condition which, for want of a better term, we call congenital amblyopia of one eye. Any one who has carefully examined many eye cases in the clinic, or for the advisory board, or for the review board at one of the cantonments must have been struck by the frequency of this condition, the degree of amblyopia varying from the ability to recognize forms or to count fingers up to $^{20}/_{100}$ or better.

The simplest tests show that the man is not malingering, and a careful ophthalmoscopic examination fails to reveal any deviation from the normal. On inquiry one frequently gets the history that the poor vision of one eye was not discovered until some trifling incident or circumstance prompted him to close the good eye and an examination later by a physician showed the degree of the defect.

Such cases, provided there is no fundus lesion observable, show a practically normal form field and good fields for color, showing that only the central vision is affected. Such persons are seldom annoyed by asthenopia if the fellow eye has fairly good vision and no great refractive error, for they do not have binocular single vision.

Such men, if otherwise physically fit, should certainly be accepted for special or limited military service, if not for general service; many of them are engaged in occupations requiring good sight. We should profit by the English and French standards so far as this class of cases is concerned. It seems to me that our standards for special or limited military service should be changed to read:

"Vision $^{20}/_{40}$ in one eye (either right or left) without glasses, and in the other sufficient vision to count fingers, provided examination shows a fairly good form field and there is no evidence of organic disease in the eye;" or $^{20}/_{200}$ in each eye, without glasses if correctable with glasses to $^{20}/_{40}$ in either eye.

The British standards, as has been shown, would allow such a man to be put into Category A for general service, and it seems to me that ours should do the same if the right eye is the good one.

In regard to the question of standards of vision for officers and enlisted men, they would be greatly simplified if they were the same for officers and men in the various branches of the service. Such is the case at the present time in the line and Signal Corps in which there is demanded right $^{20}/_{40}$, left $^{20}/_{100}$, with no correction required. Men could be safely admitted to the Ordnance and Hospital Corps with lower vision than $^{20}/_{70}$ in each eye corrected to $^{20}/_{40}$, and there would seem no good reason why officers in the Medical Corps or Medical Reserve Corps should be required to have their vision in each eye corrected to $^{20}/_{20}$ or that they should be rejected if their unaided vision does not come up to $^{20}/_{100}$. If this rigid requirement is strictly enforced, many good medical officers will be lost to the service. If the condition is myopia it would be perfectly safe to accept men with $^{10}/_{200}$ at least in one eye, and if one is corrected to $^{20}/_{20}$ or even $^{20}/_{30}$ it is hardly necessary that the other be correctable to the same degree.

CONCLUSION

I would urge that in the present great crisis, the standards of visual requirements for our Army, at least in certain branches of the service, should be made more elastic in order that men may not be lost to the service who, aside from their eyes, are in good condition for it.

THE NEUROPSYCHIATRIC PERSONNEL

THE CHARACTER AND MAKE-UP OF THE MEMBERS OF THE NEUROPSYCHIATRIC DIVISION OF THE MEDICAL RESERVE CORPS *

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There have been thus far detailed to the Neurological Institute of New York City by the Surgeon-General's Department of the Army for intensive study in neurology and psychiatry about 100 officers of the Medical Reserve Corps. At this institution, the course was given by twenty-two specialists, among whom were men of such standing and preeminence as Charles L. Dana, M. Allen Starr, Bernard Sachs, J. Ramsay Hunt and George H. Kirby; and whose interest and fidelity in the work were reflected by the intensity of application and rapidity of progress of the Army medical officers assigned there.

These officers were of many types—physical and intellectual—and of all ages within the Army limits. Indeed, the suspicion that some were over age was, I take it, well founded. Physically the officers of the neuropsychiatric course were, as a whole, well set-up—not particularly of military bearing, excepting a few that had seen military service in the National Guard on the Mexican frontier—but fairly erect in their bearing. Their average height was considerably above the usual, and it took but few of them to fill a conference room. Mentally, they were of all grades. A few, who had seen only institutional life since their graduation from a medical school and who had had in this restricted environment but little contact with the larger world, were at first usually shy and rather ill at ease in the company of others of the class who were more, or shall we say, less fortunate. Of the others,

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many had been in general practice with neurologic bent and were alert to grasp everything in the nature of novelty in diagnosis or therapy that was offered. There was a third group that had retired from medical practice for one or another reason, for whom the call to Army service was a lure not to be denied. It seemed to resuscitate and rejuvenate them, and they acted like children with a new toy. Some few men had taken out commissions because they were of draft age, and took this means of going into the Army while the going was good. Finally, there was a set composed of real neurologists and psychiatrists who had made intensive study of their specialty and had attained some degree of note and proficiency in their several communities before entering the service. Their number was about twenty-five of the 100. They were able to offer criticism of a constructive kind in the analysis of cases; their interest and intelligent cooperation was a constant stimulus to their less favored companions and their knowledge and past experience with neuropsychiatric cases put the instructors of the course on their mettle and helped to raise the level of the discussions and conferences to a degree never attained in a medical school or ordinary graduate course. Was the subject of debate epilepsy, a pathologist from Craig Colony, a member of the class, could offer from his vast experience facts of the utmost importance; was it pituitary disease, a former assistant of Cushing would regale us; was it shell shock, one of the class, who had been in England with Mott at Maudsly during the past year, had things to say. It was indeed a forum from which he who brought nothing must have been poor indeed. This brings up the thought that such a forum after the war would do more for neurology and psychiatry than a decade of graduate didactic teaching. I know that the writer frequently came from his teaching, learning more than he had taught.

The basic medical education of the class varied roughly with the age of the men. The older they were, the poorer their original equipment. Nothing so impressed us as the evidence of the rapidly increasing standard of medical education in this country, as evinced by the knowledge of the younger men compared with the vague notions of medical science of the older men. This does not mean that the younger men were better—far from it. Their knowledge was more precise; but their dependence on laboratory facts for accurate diagnosis stood in sharp contrast to their older confrères' greater powers of clinical observation.

Among such heterogeneous material, it may well be imagined that difficulties in the arrangement of a course would arise. And they did. But as this is Dr. Weisenburg's province, I shall not dilate on it excepting so far as these difficulties made it rather hard to engage and fix the attention of those to whom the presentations of cases were trite. As a result, there was at first not a community of interest. What appealed to the tyro in nervous diseases did not interest the adept. At first, therefore, the more mature man looked superciliously on his less favored classmate. But gradually, as this latter made rapid progress, he frequently overhauled his vainglorious brother and honors were even. They had then arrived on a plane where there could be a real interchange of views, and the entente cordiale was established. It was interesting to see the constant repetition of this process in successive groups. On completing their course they were universally on the friendliest footing, with the common object of doing their best to make and keep our boys fit for the front.

At the first sessions in the course—most of the men having only recently left private life—there was some laxity in attendance and regularity, and discipline was rather conspicuous by its absence. That is to say, it did not seem heinous to be ten or fifteen minutes late in the morning, or to give a time-worn excuse for an absence. Nor yet did the course of instruction in some awaken more than a mild interest—and that rather in the instructor and his shortcomings than in the course. But very rapidly did these conditions change. As soon as it was understood that the work began promptly on the minute and that the very first minutes of a presentation frequently carried important demonstrations on which a later examination might hinge, the cure was complete and permanent. Of the entire group of 100 men, but two could never be brought to see the reasonableness of this procedure, and they were finally sent to an officers' training camp. This proving too much for the older one, a man well on in years and probably too old for such adjustment, he was allowed to resign from the Army.

In this connection, it might be well to consider some of the personal habits of the men, as shown by daily contact in the conference room or hospital ward. Of the total number, I do not believe more than four were given to alcohol in any marked degree, and only one to so great an extent as to warrant his discharge from the service. As for drug addiction, only one had been mildly affected, so far as we could judge. Three men were markedly negativistic; that is to say, they would react to a statement made by the instructor in the course of a demonstration by an abrupt negation or a stubborn refusal to see what was apparently plain to the others, and the reasons for their attitude were never based on proper foundation. These same men were also noncooperative and did not get along well with their companion officers. They usually went about alone. The rest of the class resented their attitude and occasionally took them to task. But they remained unchanged to the end. One of them had egocentric qualities, in addition, priding himself on his superiority to the others in confidential talks with his instructors. I believe all three were of a potentially psychotic make-up.

Apart from these few men out of the 100, the members of the class were strikingly free of mental taint. After a week or two at the institute, the men would undergo a species of self-measurement—would weigh themselves in the balance, as it were—and then would come to me singly or in small groups, telling me of their shortcomings in their specialty and asking to have a little more time given on this or that particular branch in neuropsychiatry. In this way, the course was gradually molded to suit, as nearly as possible, all their needs.

The chief subjects in which special emphasis and time were desired were the fundamentals—anatomy, physiology and pathology. It was also in these basic studies that the men were largely deficient. If there is one thing on which I should like to lay stress in the teaching of neurology in the future—whether to medical students or to advanced graduates—it is that the physiology of the nervous system must be one of the important basic branches. It should be taught in the

laboratory—at a working bench if possible—after the principles of the subject have been inculcated. In no other way can the dynamics of the central nervous system be appreciated. These men, in their process of self-measurement, arrived at this conclusion severally and independently. They felt that without such foundation their outlook was distinctly limited to clinical types—to fixed pictures requiring fixed classifications and fixed therapy, if indeed there were any therapy at all. They felt that they wanted to understand the development history of a case, the nuances and transitions which it underwent. This brings me to their inveterate desire, in the first period of their instruction, that is, the first fortnight, to make a diagnosis. It must be a distinct and clear diagnosis. For borderline cases they had nothing but impatience, for did not the Army regulations require a fixed diagnosis of a clear-cut disease, in order that a man might be rejected (or not) out-of-hand?

At one time there happened to be a case which involved three diagnoses, namely, progressive muscular dystrophy, Friedreich's disease and Marie's ataxie cérébelleuse. Very few of the class were satisfied with a critical discussion in which no sharp line was drawn between these possible diagnoses. And yet it was not possible to draw this sharp line. Then came the inevitable question. How should you classify this case in the Army? The Army surgeon will not accept more than one diagnosis. It was not unlike the question of the lawyer to the expert witness: "Will the plaintiff live a year longer? Answer yes or no." However, during the second fortnight of the course, the men began to lose their dogmatic, stilted attitude and regarded the cases in a broader aspect and from many angles. The neurologists realized that there was a mental side to most pictures, while the psychiatrists recognized that dementia praecox might be confounded with frontal tumor. And so they were gradually led to broader views of their allied subjects. At the same time, a growing respect for one another arose, and a real entente cordiale gradually developed. From this situation, progress went on apace. Each newcomer went through the same process—at first a certain aloofness; then opposition and negativism followed by a stage of silence; a gradually increasing tolerant attitude with partial merging and submerging of old concepts; and a final emergence into the light of breadth of vision. This moulding of character constituted, I believe, the very best phase of the entire course. With almost no exceptions, the men, as they were ordered away to their several stations, expressed their delight with the immense broadening influence that the contact with the instructors and other members of the class had had on them. They had gained something which added to their interest in life, and they looked to the future with new zest and eagerness. They had been lifted out of their past deadly routine.

Of course, even here there were some who were deadly dull—who brought nothing, who gained nothing; who might have remained in the course six days, or six months, or six decades, it mattered not; who never argued and never got impatient; never hurried and never learned; they never slept in lecture and probably will never die. I veritably believe that even the Surgeon-General's Office forgot all about them, for they were rarely called. I certified time and time again to Washington that so-and-so had completed, not his "course," mind you, but his "time," and begged to have him ordered elsewhere. But he stayed and stayed, until through error, his monthly report went to Washington as "excellent." Before the error could be rectified he was suddenly whisked away. I think this error was made only twice—a favorable commentary on the quality of the class.

And as we are now on the subject of reports, a few words on paper-work may not be amiss. Gentlemen, paper-work for an active Army medical man is deadly, and worse, it begets sin. At first, an adjutant for the class was appointed to take over this work. He had had a little experience in the Army before coming to the school. It was decided that each order to every man of the class—according to Army regulations—needed five exact copies: one for the Surgeon-General's Office; one for the Adjutant-General; one for the Military Director of the school; one for Divisional Headquarters, in order to obtain pay, and one for individual filing. A succeeding adjutant who had had even more military experience than the former assured me that three further copies were necessary—making in all eight per order per man. Add to these, the necessary reports, also in triplicate, on each man every month, his duplicate pay vouchers, receipts and acknowledgments in triplicate of quartermaster's supplies, and you have a very respectable mass of filing material. Our adjutant took care of this; and the adjutant was the one man who invariably had a preoccupied look and was apt to be worrisome and irritable. The method makes a poor private secretary of a competent neurologist. It also undermines his health, so that it is necessary frequently to change the incumbent. Washington had, in addition, an annoying way of ordering your adjutant to other fields as soon as he had acquired efficiency, and then your own health suffered.

An interesting episode arose on one such occasion. Our adjutant, a well known neurologist, was ordered to New Mexico from the Neurological Institute. In answer to a request to remain longer, Washington replied: "Impossible to grant request." While en route another telegram followed: "Order to proceed to New Mexico rescinded." It was therefore incumbent on him to return to New York. In desperation, he telegraphed me for instructions. Before I could reply, a fourth telegram from Washington arrived: "Order rescinding order ordering you to New Mexico revoked." This was too much even for a neurologist, and I have not heard from him since. He was tagged out dodging between third base and home plate.

The very best adjutant if the class, as an adjutant, was one who had had much experience on the Mexican border. He was precise, military in carriage and utterance and snapped his replies and requests. But he couldn't spell. The simplest words were phonetically rendered and when corrected, he smiled almost cheerfully, but went right on in his own way. And to make the matter still sadder, he was a good neurologist. The one phobia that possessed the class as a whole was reflected in their faces each morning when telegrams were read. They feared that they might lose their adjutant, and then, whom would the lightning strike next? But even to this brain-racking experience they finally adjusted themselves.

In short, at the termination of each course period, we had a class of men who had profited largely by their experience and their intensive training at the institute. They were well rounded out, their original deficiencies and shortcomings from the clinical as well

as from the human and sociologic standpoints were pretty well made up, and they had acquired confidence in themselves and in their ability to do what would be required of them in the Army. From being diffident and uncertain, they had developed initiative, impetus and a spirit of cooperation which was perhaps more important than the actual teaching result.

At the completion of each course, the men could be fairly well divided into two large groups depending on the character of their mental equipment, experience and dynamic power—a group of leaders and organizers constituting roughly 20 per cent., and a group of detail men who had the patience, the receptivity to orders, and the peculiar tacit acceptance of an inferiority, which would not interfere with their equanimity and would not require original thought or initiative from them. This latter group, constituting 80 per cent. of the class, were excellent in their obedience to orders to the last detail, would hand in good reports on cases they examined and would make fairly good diagnoses. They were not brilliant nor original nor forceful. They were reliable. It is curious that these two groups formed spontaneously, as their several characteristics were developed, and the leaders were looked up to by the rest in tacit recognition. It was also never a division based on Army rank. In fact, I have never seen so little importance given to rank as just in these neuropsychiatric classes. But, wherever in the general grouping at the end of a course, a man found himself, he realized that it was his own effort that brought him there, and that his standing was actually determined by his classmates' opinion of his attainments. But all realized the great extent of the improvement that had taken place in them individually.

Each man, at his departure, almost without exception, made it a point to come to the director to thank him for what he termed the most gratifying and profitable experience of his medical life. And from all parts of the country, as well as from abroad, letters are continually received repeating these same statements in connection with the neuropsychiatric work that the men are called on to do. Army experience with its intensive training has been for the majority the greatest event of their lives. They recognize it, and they express their gratitude for it.

In conclusion, it may be said that the grouping of men of the neuropsychiatric division of the Medical Reserve Corps into schools or courses for intensive study is a procedure which amply repays for the six weeks' time devoted to each session, in that it molds of a mass of heterogeneous material with no definite aim, a homogeneous, constructive efficient corps of men, well adapted for the specialized work demanded of them.

ABSTRACT OF DISCUSSION

DR. FRANK P. NORBURY, Jacksonville, Ill.: I would like to ask if this course is to continue? In securing candidates for neuropsychiatric work at this time, many are anxious for the training. Two men would like now to take the intensive course mentioned by Dr. Timme. This question is asked of me at least once a week by prospective candidates for service. What is the necessary procedure in order that prospective candidates may be assigned to this training?

DR. JOSEPH BYRNE, New York: I cannot praise too highly the wonderful analysis Dr. Timme made of these matured students. A point I wish to emphasize that may have escaped attention in the mass of information imparted, is the point stressed in regard to the teaching of neurology based on anatomic and physiologic knowledge. One of the great mistakes that occurred in the development of medical science, although not recognized at the time, was Purkinje's divorce of study of physiology from anatomy. How many of us today can bring the fundamental sciences practically to the bedside for the diagnosis and treatment of disease? In neurology especially the one fundamental thing we have to hold on to is anatomic and physiologic knowledge. In my teaching I always insist on it as well as on neurohistology. In studying neurology we have absolutely nothing to rely on if we get away from the fundamental facts of physiology, and we should thank Dr. Timme especially for emphasizing this important fact in teaching.

DR. WALTER TIMME, New York: Regarding the future of the neuropsychiatric course and how long it is to continue, my only answer is measured as all answers ought to be measured in talking of the future—we none of us know. I certainly do not know how long the course will extend. It may depend on the number of applicants for the neuropsychiatric units, or it may depend on whether a large number of those men may immediately be made necessary for army work by the rapid evolution of our troops for duty abroad so that there would not be time to give even six weeks' training.

I have always felt that physiology especially is a subject very much neglected, and when it is taught, as it is so often, according to a didactic method and by a professor in an amphitheater it is a perfect farce meant only for schoolchildren. It certainly does not fit in with the medical education of a mature man.

BASE HOSPITAL AMPUTATIONS IN WAR

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There is little interest in the tabulated report of amputations that I have made for this study, and therefore it is omitted. It has seemed, however, that an analysis of the correlation between the indication and the mortality resulting from a sizable list of these operations might prove profitable. For military reasons I am unable to state the relationship between the number and mortality of these patients and the total of admissions to the hospital with the average total mortality during the same period.

Base hospital amputations may be roughly divided into two classes: first, those that are indicated on the arrival of the wounded from the clearing stations, and second, those required much later. In the first class we may include the early gas infections, fulminating sepsis of large joints and bone injuries, and those wounds which have been passed through clearing stations in rush periods without receiving surgical attention, their primary need being amputation. In the second group might be placed the secondary hemorrhage from extremity injuries, septic limbs with or without gunshot fractures, septic joints, late gangrene from primary vessel injury, and trench foot. In the face of tetanus we do not operate.

War wound sepsis leads many surgeons of experience to change their ideas about their ability to control sepsis and the advisability of amputation. It seems to me that more patients suffer from delayed acceptance of the indication of amputation—thus failing to survive the operation—than other patients are mutilated by early amputation or operation before one would consider the indication rigid in civil work. That point is strongly brought to mind by patients suffering from

septic large joints, such as the knee, many of whom might escape with their lives if an early amputation were performed. No one favors mutilating a man by removing a limb, but after some experience in war surgery one may prefer being a party to mutilation in order to see a live patient result. The sepsis of war wounds is so insidious when once under way that the period beyond which no operation will return a live patient may be passed unnoticed.

Hence, a guarded advice: *Make the indication rigid, but amputate early.* Gunshot fractures terminate surprisingly well; one has only to read the evidences of base hospital records to see that. A certain standard of fracture treatment has arisen which protects them; its provisions are excellent; but when a question of amputation arises, the same general admonition concerning a final live patient must be borne in mind. In my experience, secondary hemorrhages are the most dreaded, and combined with septic fractures are the strongest indication for amputation. Gas infection may not be so fatal; early muscle group excision has done much for these patients, as has been reported,[1] and gangrene from vessel injury, trench foot, etc., is always a delayed reason for operating.

The prompt reaction of wounded soldiers from early and indicated amputation is striking.

STATISTICAL SUMMARY

The total number of amputations reviewed was 121, following which there were thirty-five deaths, a mortality equivalent to 29 per cent. The total number of gas infections handled among amputated patients was twenty-seven, with twelve deaths and fifteen recoveries.

Arms and Forearms.—There were twenty-seven arms and forearms amputated with three deaths, a mortality of 11 per cent. Seventeen of these patients had a gunshot fracture, and in all the fatal cases there was gas infection. Gas infection was present as an indication eight times, resulting in five recoveries after amputations. In those who recovered, amputation was performed on an average of three days after injury; the average in the fatal cases was longer between injury and amputation. Sixteen of the twenty-seven patients offered sepsis of the arm or septic fracture as an indication. Gangrene from primary vessel injury was the indication in the other three patients, all of whom recovered.

Legs.—There were twenty-three leg amputations with four deaths, a mortality of 18 per cent. Twelve of these patients sustained gunshot fracture, but only one of them died. Other indications and the results were: sepsis, 12, deaths, 2; secondary hemorrhage, 1, no death; gas infection, 3, with 1 death; gangrene from primary vessel injury, 3, with no death; trench foot, 3, with 1 death after double amputation.

Patients with septic gunshot fractures of the leg were carefully watched and cared for, and consequently amputation was performed early. From the review one might say, however, that septic legs from other gunshots without bone involvement went too long before amputation.

Thighs.—In the study of seventy-one thigh amputations we find twenty-eight deaths, or 40 per cent. Of these deaths the indication for operation was sepsis in 13, gangrene in 4, secondary hemorrhage in 5, gas infection in 5, and trench foot in 1. In the eight fatal cases showing gas infection, operation was performed at an average of four days after wound reception, and three patients had sustained complicating femur fractures.

Septic knee joints furnished amputation indications in thirty-two patients, of whom thirteen had complicating long bone fractures into the joint. Of the thirty-two, nine resulted fatally, a mortality of 29 per cent., which is the average mortality of the entire series, and in the nine deaths there were six with a joint fracture. The average time elapsing between injury and amputation in the nine fatal knee sepsis patients was eight days. In twenty-three septic knee cases in which amputation was performed and the patients recovered, there was an average of 20.7 days between injury and operation. This seemingly contradictory fact is accounted for, however, by the tendency of the knee joint sepsis to develop with relative slowness, owing to the fact that it is often secondary to the outer wound infection and seeps into the joint late.

Fracture of the femur alone, without knee joint sepsis, gave indication for amputation in seventeen instances, nine of which, or 53 per cent., ended fatally. The femur indication amputations followed by death were performed on an average of 21 days between injury and amputation, whereas those with recovery had an average interval of 8.5 days. The number of patients observed is too small from which to draw a general conclusion, but the striking difference between the average preamputation period after wounding makes it appear that operation was put off too long to obtain a live patient.

The mortality percentage after amputation from septic fracture of the femur in this series is equivalent to twice that from septic knee joints. This may be explained by the fact that a septic joint, although slow to develop, often becomes alarming from its pain and temperature symptoms, and attention to its sepsis is called earlier than in a more slowly developing thigh sepsis from gunshot fracture. The fracture patient is liable to run along for weeks, getting into a weak and septic state with great burrowing of pus, and to suffer severely from the amputation shock on account of his poor condition.

Gas infection existed in sixteen patients whose thighs were amputated; eight of them recovered. None of them had complicating gunshot fractures, and four sustained primary injury to the great vessels of the limb. Vessel injury renders the prognosis very bad in gas infections. Of the four patients in whom secondary hemorrhage induced thigh amputation, three died, two almost immediately and one later of septic thrombosis of the femoral vein. Secondary hemorrhage appears as the frequent cause of death in proportion to other causes and leads to the gravest prognosis. When anatomically possible, one might make a rule that in all severe secondary hemorrhages involving the main vessels, operation should be performed at once for ligature of the vessels of the limb involved, if the indications do not warrant amputation. If required, the removal of the limb may be performed later when the patient has recovered from shock and from blood loss. It is my experience that any secondary hemorrhage worthy the name complicating a septic fracture means a dangerous pathologic

1. Speed, Kellogg: Localized Gas Infections in War Wounds Treated by Muscle Group Excision, The Journal A. M. A., Jan. 26, 1918, p. 225.

condition within the limb and is a strong indication for immediate radical procedure. In war wounds, practically all these limbs show false aneurysm on dissection. If the main vessels, as the femoral artery or its larger branches, are concerned, if there is severe sepsis present, the vein should be tied at the same time as the artery, because that act cuts off the possibility of venous hemorrhage and of septic absorption by the vein—a very fertile source of such absorption.

AMPUTATION TECHNIC

The one time popular guillotine operation or straight cut off of all tissues on the same level is falling into disuse. It means, of course, a secondary amputation which is always one involving bone resection. The subsequent application of stump splints fails many times to save the length of limb obtained, and with the recent development of clearing station surgery, the use of suitable flaps is now returning. In my experience these points have been observed: A circular skin incision answers the purpose in the majority of instances. The skin flap can be slit up one or both sides to obtain an easily reflecting cuff, which is cut very long. If it is damaged by the pathologic condition present, any flap device that meets the findings of the particular injury is used. In septic limbs the muscles are generally cut off transversely higher up; there is no attempt to make pyramidal flaps of them. The bone is also cut higher, and aperiosteal bone ends are invariably left—in the femur for a distance of 1 inch at least. On account of secondary hemorrhage from bone marrow or of late infection spreading up the long bones by way of the marrow opening, and also to avoid endosteal proliferation, the medullary cavity is often curetted out for three-fourths inch above the sawed end and its cavity filled with bismuth iodoform petrolatum paste[2] or bone wax.

Ether is the anesthetic of choice. In extremely septic patients in poor condition, spinal anesthesia with stovain, the patient being held in a semiupright position, gives excellent results. No instance of its administration has failed, and such severe types of amputation as hip disarticulation have been satisfactorily performed with its aid. When shock effects were greatly feared, in selected patients treated with spinal anesthesia, the sciatic nerve has been injected with stovain before severance. An attempt has been made to perform all the surgical work rapidly. A very complete hemostasis of severed tissues is to be desired. For that purpose mattress stitches of catgut are often employed in the large muscle bundles of the thigh. When sepsis is not too great, the skin flaps are often loosely approximated by silkworm-gut stitches. No attempt is made to suture muscles in war amputations. Dry or clinging gauze packs in open stumps should be avoided. If a pack is indicated for capillary oozing, paraffin gauze strips or a paraffin gauze covering over dry gauze packing can be used. The removal of dry gauze necessitates a second anesthesia, usually of nitrous oxid, and some packs are neglected when patients are passed along in rapid evacuations.

PRACTICAL SUGGESTIONS

From the notes on an inquiry carried out at certain military hospitals in England regarding the later stages of amputations and compound fractures, circulated in January, 1918, we may learn many practical points. Some of the conclusions reached are:

Upper Extremity.—For the forearm, a stump less than 2½ inches long below the elbow is useless, and reamputation will be necessary.

Amputation should not be done through the elbow joint because the stump is bulbous and unsuited for an artificial limb; hence one should amputate above the humeral condyle.

For the Arm: Any portion of the humerus should be left; a stump 3 inches long is the desirable minimum. A 5 inch stump gives a good working arm and an 8 inch stump the most satisfactory result. The humerus should always be divided above the epicondyles to avoid a bulbous end.

Lower Extremity.—Foot: Comminuted fractures of the tarsal bones, with involvement of the midtarsal joints, particularly when combined with fractures of the first or fifth metatarsals, are best amputated; the foot resulting from the prolonged suppuration and necrosis consequent on such injuries is generally painful and useless, and inferior to an artificial one.

Ankle: Severe comminuted fractures involving all the bones of the ankle joint should, as a rule, be amputated. When comminution is limited to the astragalus, a good foot may be obtained by removal of this bone—an operation which should have a greater measure of success if done in the earliest stage.

Syme's amputation should be performed whenever the conditions are such as to give a reasonable probability of success This operation, if well done with a thick and well nourished heel flap, gives an excellent weight-carrying stump, superior to that in the lower part of the leg. The success of Syme's amputation depends entirely on the condition of the heel flap and if this is thin and ill-nourished, reamputation higher up may become necessary. At casualty clearing stations, opportunities will occur from time to time in which Syme's amputation may be safely performed in place of amputation through the leg.

Pirogoff's amputation is universally condemned; the os calcis is likely to be drawn back by the Achilles tendon, exposing the scar to pressure and making it difficult to fit a satisfactory artificial foot

Leg: The site of election is from 9 to 11 inches below the knee according to the height of the patient, 9 inches for a short man, 11 inches for a tall one, measured from the tubercle of the tibia to the end of the stump. (This probably means for the starting incision of the skin flaps. Certainly a bone stump that long is impracticable.) The best method is by lateral flaps, containing as much muscle as possible. The fibula should be cut 1 inch shorter than the tibia.

Amputation immediately above the ankle joint, where the tissues are chiefly fibrous, does not give a satisfactory stump.

The highest point at which amputation of the leg will give a useful stump is 2 inches below the tubercle of the tibia. When it is necessary to divide the bone at a higher level, it is better to operate above the knee joint.

It is important that all amputations below the knee should be kept extended on splints, as permanent flexion of the stump is easily acquired and is a very troublesome deformity to correct.

Knee Joint: Amputation should never be performed through the knee joint except as a temporary measure when necessary to save life. The stump left after such amputations is unsatisfactory and difficult to fit into a bucket.

Thigh: The nearer to the condyles the bone is divided, the better is the stump, provided too much of the bulging end of the bone has not been left. The most perfect result is obtained by the Stokes-Gritti operation, which gives an excellent weight-bearing stump. When the conditions are favorable for doing this operation it should undoubtedly be practiced at the casualty clearing stations, as has already been done by some operators. Failing Stokes-Gritti, Carden's operation gives a good weight-bearing stump. Amputation higher than Carden's will not give a stump that is capable of bearing weight on its end; the important point to

2. Bismuth subnitrate, 1 part; iodoform, 2 parts; sufficient liquid petrolatum to make a thick paste.

bear in mind is that the greater the length of femur left, the more useful will be the limb.

The best method of amputation of the thigh is by long antero-external and short postero-internal flaps, the resulting scar after this operation being well drawn up to the inside and behind, the seat of least pressure.

A reasonable amount of muscle in the flaps is an advantage, but flaps should not be cut too thick and fleshy, as the stump will then be difficult to fit into a bucket.

In the upper third of the thigh it is better to leave any portion of femur, however short, rather than to disarticulate. Even sawing through the neck of the femur gives a firmer and better stump than amputation through the hip joint.

THE TREATMENT OF EMPYEMA

BY FREQUENT ASPIRATION AND THE INJECTION OF SOLUTION OF FORMALDEHYD AND GLYCERIN

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The treatment of empyema is that of pus anywhere —drainage. But the manner in which drainage shall be secured is a matter of vital importance, especially in the Army, where it is necessary to get men back to their organizations at the earliest possible date. Any method of treatment that cuts short convalescence will be of tremendous value to the government. It will result in a great saving of money and manpower, and these are the factors that will win the war.

Thoracotomy and costectomy are the methods most frequently employed. In some virulent cases in which rapid drainage is necessary, costectomy is the only method for consideration. This always leads to contraction and collapse of the lung to a greater or less degree. During the convalescence these men are held in convalescent wards, where, at least in this camp, they are put through a series of graduated exercises and thus brought back to normal. Thus weeks and sometimes months pass before the men can be sent back to duty. Of course, there will be a period of convalescence no matter which method of treatment is used; but we believe that this period can be materially shortened.

PROTOCOL OF CASE 1*

Aspirated	Amount of Pus Removed, Cc.	Bacterial Estimation per Field
1/28/18	600	From 60 to 75
2/11/18	2,000	From 40 to 50
3/14/18	2,000	From 40 to 50
4/15/18	2,000	From 40 to 50
5/15/18	2,500	From 50 to 60
5/18/18	200	From 20 to 25
5/20/18	90	From 5 to 6
5/23/18	30	Sterile
5/27/18	Dry tap	Temperature and pulse normal

* V. R., private, aged 24, entered base hospital, Jan. 8, 1918, suffering from scarlet fever. Jan. 28, 1918, empyema developed.

Our method is not new, being simply plain aspiration with one or two variations.

Under the direction of Major S. M. Rinehart, tuberculosis specialist at Camp Sherman, we undertook a series of cases in which aspiration was done followed by the injection of 2 per cent. formaldehyd solution in glycerin. Aspiration was done every other day, if there were physical signs of fluid, and that is the point we wish to emphasize. We do not wait for the temperature and pulse to go up, indicating sepsis. When once the diagnosis is made, aspiration is done as rapidly and as frequently as the pus accumulates, and we would not hesitate to do this every day, although every other day seems sufficient. The idea is simply to keep the chest cavity free from pus as nearly as possible, to remove it as rapidly as it accumulates and to inject 2 per cent. solution of formaldehyd in glycerin as advocated by Murphy. A large caliber needle is used, and the operation is done under local ethyl chlorid anesthesia. No harmful effects result from the repeated aspirations, and the patients complain very little of pain, much preferring aspiration to the discomfort of allowing the pus to remain and its resultant absorption.

PROTOCOL OF CASE 2*

Aspirated	Amount of Pus Removed, Cc.	Bacterial Estimation per Field
2/23/18	4	75
3/23/18	1,500	75
4/12/18	2,500	From 50 to 60
5/15/18	3,000	49
5/21/18	1,500	35
5/24/18	500	20
5/26/18	200	From 10 to 12
5/30/18	30	From 5 to 6

* J. Z., private, aged 23, entered base hospital, Jan. 30, 1918, suffering from influenza. Feb. 18, 1918, empyema developed.

By this method, men get well far more quickly than by thoracotomy or costectomy, and there being no collapse of the lung, the resulting convalescence is greatly cut short. There is no resulting deformity of the chest; and the formation of localizing adhesions about the drainage tube, thus forming walled-off pockets of pus and requiring secondary operation, never happens. It is a method which we think should always be employed first, since it will prove sufficient in the majority of cases, can do no harm, and offers no contraindication to costatectomy, which can be done later if indicated.

Records of two typical cases are given, showing dates and number of times aspiration was performed, with bacterial estimation done on each specimen of pus obtained. These cases are interesting in that they show how rapidly the bacterial count and the total amount of pus increased as long as aspiration was done at long intervals, and also how rapidly both dropped when aspiration was done whenever the physical signs indicated pus, however small the amount. Up to May 15, aspiration was done about once a month. From that time on it was done as rapidly as the pus accumulated, and the rapid drop in the bacterial count would seem to indicate that this is a valuable scientific and rational addition to our armamentarium.

Reforming the Soda Fountain.—In addition to abolishing the common drinking cup, the government has decreed that soda fountains in or near training camps must either sterilize their glasses or use paper or paraffin containers. Seven or more states and a number of cities have taken action regarding cleanliness in connection with the dispensing of soda water. Tennessee has a model law for this purpose, to be administered by the Food and Drug Department of the state, which sets forth strict requirements regarding places used for the preparation, sale or distribution of foods and their protection from all foreign or injurious contamination. Exact procedures are prescribed for the cleaning of glasses, dishes, spoons and all receptacles and implements used in serving food and drinks, either by hand washing, mechanical washers, live steam and dry heat, and the use of paper receptacles. The law has especial reference to soda fountains, soft drink and ice cream stands.

DIPHTHERIA AND DIPHTHERIA CARRIERS IN ARMY CAMPS

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The number of admissions to the base hospital at Camp Sherman has on several occasions taxed its bed capacity. This has necessitated the overcrowding of wards and the placing of patients in close contact in aisles and otherwise. The inadvisability of this procedure was clearly and early demonstrated in the frequency of new infections and reinfections. To meet the demands made on the hospital for the care of patients, a survey was instituted to determine the means available for increasing the number of vacant beds without resorting to ward overcrowding. It developed in this survey that the desired end in part might be obtained by the prompt and intensive treatment of the trivial conditions causing large numbers of hospital admissions to the end that the average days in hospital be lessened. This plan contemplated the acquiring of the needed bed space in hospital and, what is of greater significance, making it possible to return these patients earlier to their organization for duty and training.

As a single item in this survey it was noted that the average stay in hospital was high for a group of individuals who were not clinically ill, but who were a potential source of infection to their fellows from being carriers of various organisms, notably diphtheria and meningitis. Although the etiology of scarlet fever is not established, the hospital status of scarlet fever patients after the active stage is essentially that of carriers. In the case of scarlet fever, the arbitrary holding of all patients for six weeks undoubtedly leads to the retention in hospital of many individuals well beyond the time that they are sources of infection. On the other hand, the indiscriminate release at the end of six weeks of all scarlet fever convalescents who are physically fit is not without risk of contact infection if the retention of *Streptococcus hemolyticus* in the nasopharynx is accepted as a criterion of the patient's potential infectivity. In the case of meningitis and diphtheria, in the days prior to universal masking, it was exceedingly difficult for either convalescent carriers or contact carriers to exhibit a sufficient number of negative laboratory examinations to justify their release. Judged in terms of results obtained after the institution of masking, it may be accepted that the long hospital stay for certain carriers of diphtheria and of meningitis is to be attributed to constant reinfection of each other on the part of carriers living together in intimate contact. The remedying of this condition was a definite factor in reducing the stay in hospital of meningitis and diphtheria carriers. However, over and above these bettered conditions, it was found that, regardless of precise treatment of various kinds, many carriers persisted in the retention of organisms. Since diphtheria carriers are always present in considerable numbers, the problem of such carriers in relation to the loss of man power is of appreciable economic concern. Accordingly, all pertinent data relative to diphtheria and diphtheria carriers have been collected with a view of formulating a program for the expeditious, adequate handling of such conditions. This program has as its chief aim the systematizing of all protective procedures so that (1) the quarantining and isolation is such as to hamper to a minimum the duties and training of the organizations in which the cases appear, and so that (2) the treatment of isolated carriers is such as to reduce to a minimum the time required to free the carriers of diphtheria organisms.

DIPHTHERIA CARRIERS

The outstanding factor in the communication of diphtheria is the matter of diphtheria carriers. These carriers are of two types. The "convalescent carrier" is the individual who, after having been a clinical diphtheria case, retains in the pharynx, nasopharynx or elsewhere the diphtheria bacillus. The "contact carrier" is the individual who, although immune to diphtheria, after coming in contact with a convalescent carrier or other contact carrier acquires and harbors the diphtheria organisms. The convalescent carrier, from the fact that virulent organisms are harbored, is potentially the source of greater danger of infecting others than the contact carrier who harbors in a high percentage of cases of avirulent diphtheria bacilli. However, from the fact that the clinical carrier was earlier known to be a clinical case and consequently segregated, this type practically is of less danger than the contact carrier who, being unaware of his condition, mingles freely with large numbers of persons.

The frequency of diphtheria carriers among normal healthy persons has been investigated by Goldberger and his associates.[1] Examinations were made on 4,093 healthy persons of diverse ages. Of this number thirty-eight, or 0.928 per cent., were found to be carriers. From an extension of these figures, any city of 800,000 population would contain between 7,000 and 8,000 carriers among its healthy citizens. By the same token the average cantonment containing 40,000 soldiers would have distributed among them, in the absence of a diphtheria epidemic, approximately 400 carriers. However, it may not be accepted that all such carriers are distributors of virulent organisms. Of nineteen carriers detected by Goldberger, only two when examined proved to be of high virulence. The same proportion applied to the average personnel of a cantonment would indicate that only about forty in a camp are the actual disseminators of virulent organisms causing the sporadic cases of diphtheria common to every camp. These figures of Goldberger's are appreciably lower than those obtained by other investigators of the same problem (von Scholly, Moss, Nuttall and Graham Smith).

The frequency of diphtheria carriers among troops in the vicinity of diphtheria patients and caring for them is reported by Labit[2] of the French army in charge of diphtheria for the "Ninth Region." In this portion of the country prior to the war, diphtheria was always endemic among civilians. On the station-

1. Goldberger, Joseph; Williams, C. L., and Hatchel, F. W.: Bull. 101, Hyg. Lab., U. S. P. H. S., 1915.
2. Labit: Arch. de méd et de pharm. mil., 1917, **67**, 779.

ing of troops there, diphtheria early occurred. In 1915, 1,450 cases developed, with twenty-six deaths. This number has been much reduced during the ensuing years. At all times, however, the percentage of carriers in the environment of diphtheria averaged 28.9, and frequently 50. In one isolated hospital unit, concomitant to the occurrence of a single case of clinical diphtheria, nineteen carriers among nurses and attendants developed. The number of carriers became so large and with so great difficulty were freed of their organisms that the physically fit were isolated, but given employment as gardeners and the like.

Obviously no data obtained either from civilian centers or from a few army camps may be accepted as accurately representing conditions generally. It is sufficient to maintain that in every camp a varying percentage of the personnel are diphtheria carriers, some of whom are carriers of virulent organisms. The larger number of sporadic cases of clinical diphtheria originate from contact with these carriers. The detection and isolation of these carriers minimizes diphtheria as a camp disease.

DIPHTHERIA AND DIPHTHERIA CARRIERS AT CAMP SHERMAN

During the period covered by this study (from Jan. 1 to June 1, 1918) approximately 55,000 soldiers have been on duty at Camp Sherman. The largest number present at any one time has been slightly in excess of 40,000. Among the total number there have been detected sixty-three clinical cases of diphtheria. These have been distributed as follows: Forty-six cases occurred in various line organizations; eight developed in patients under treatment in the base hospital, and nine appeared in base hospital attendants. It is noteworthy that no two cases of diphtheria have occurred in any line organization within thirty days of each other, and only in five instances have second cases occurred in the same organization within any time limits.

Upon the detection at divers times of the diphtheria cases that make up this total of sixty-three, procedures hereinafter to be described were carried out which resulted in the recognition of eighty-nine contact carriers. These carriers were detected in organizations as follows: seven were detected in line organizations; forty-three were detected in patients undergoing treatment at the base hospital, and thirty-nine occurred in base hospital attendants. The higher percentage of carriers in base hospital patients and attendants is attributable in part to the greater frequency of exposure to actual cases of diphtheria; but more especially is this due to repeated extensive examinations, as a safeguard against undue exposure of patients. These eighty-nine carriers were detected out of 3,215 exposed individuals examined. The eighty-nine carriers represent 2.76 per cent. of the number examined. These sixty-three convalescent carriers plus the eighty-nine contact carriers form the material on which this report is based.

If the facts are considered that the individuals composing the camp live under crowded conditions, that pass privileges make it possible for these men to visit nearby large cities where diphtheria is at all times present, and that the camp is at all times visited by large numbers of civilian men, women and children, it will be appreciated that the total number of diphtheria clinical cases that have occurred is small. If corresponding figures emanate from other camps, it is tenable to maintain that diphtheria is not a major camp disease, and that the occurrence of sporadic cases is not a matter of any especial gravity.

PROTECTIVE PROCEDURES AVAILABLE

The technical means at hand for the detection and prophylaxis against diphtheria are matters of such common information that detailed descriptions will be avoided.

1. *The Schick Reaction.*—This is the only ready method for determining whether or not an individual is immune to diphtheria. While not absolutely infallible, as shown by the development of at least one clinical case of diphtheria in this hospital among men having reacted negatively, yet it is of no little value in quickly and comparatively accurately eliminating from contacts those men who are naturally immune and have no need of being rendered passively so.

The technic of the test is as follows:

> A solution of diphtheria toxin is prepared for the purpose of such strength that 0.2 c.c. represents one fiftieth of the minimum lethal dose for a 250 gm. guinea-pig. It is essential that this solution be freshly prepared, owing to the fact that it deteriorates rapidly in such dilution, losing its value within twenty-four hours after preparation. This amount, 0.2 c.c., is injected intracutaneously on the flexor surface of the forearm. As a control, 0.2 c.c. of the same strength toxin previously heated to 75 C. for five minutes is injected in like manner about 2 inches below the site of the first injection. It is all important that the injection be made intracutaneously, as otherwise the test is of no value. A good guide for the insertion of the needle into the proper layer of the skin is that one should be able to see the oval opening of the needle through the superficial layers of the epidermis.

The positive reaction represents the action of an irritant toxin on tissue cells that are not protected by antitoxin. It indicates, therefore, an absence of immunity to diphtheria. Within from thirty-six to forty-eight hours the positive reaction consists of a circumscribed area of redness and slight infiltration, which measures from 1 to 2 cm. in diameter. The degree of redness and infiltration varies to a great extent with the relative susceptibility of the individual.

In the negative reaction, the skin at the site of injection of the toxin remains normal, as the result of the protection of the cells by the existing immunity of the individual. The pseudo-reaction consists of red areas at both sites of injection and represents a local anaphylactic response of the tissue cells to the protein substance of the toxin dilution. The same reaction appears in the control consisting of the destroyed toxin as in the unheated or active toxin. This pseudo-reaction in the hands of experienced observers can be definitely differentiated from the positive reaction. It is more often of an urticarial nature, smooth in outline as compared with the irregular redness of the positive reaction, usually considerably smaller, reaching its height more quickly and disappearing more rapidly. The following show either negative or pseudo-reaction: 90 per cent. of adults; from 65 to 85 per cent. of children between 2 and 14 years; 60 per cent. during the first year of life, and from 93 to 90 per cent. of the new-born. The inference is that only 10 per cent. of persons of military age are susceptible to diphtheria.

2. *The Toxin-Antitoxin Reaction.*—The occasions for the expedient employment of diphtheria toxin-

antitoxin mixture as a means of prophylaxis are limited in army camps. Under optimum conditions of camp public health work, it might prove desirable to do Schick tests on the entire personnel of the camp and administer successive doses of diphtheria toxin-antitoxin to all giving positive Shick reactions. In view, however, of the large number of individuals to be so tested and treated, the considerable expense and the time and labor involved, it is to be questioned whether the seriousness of diphtheria as a camp infection warrants the tedious procedure. Since the immunity derived from the administration of toxin-antitoxin mixture is active and permanent and without the same degree of risk of anaphylactic reaction, this form of protection is advantageous when considerable time is available. From four to ten weeks are necessary for the establishment of adequate protection. This fact militates against the use of toxin-antitoxin mixture in the presence of contacts with an actual case. Its expedient use in Army camps is confined to physicians, laboratory workers, nurses and such others as handle continuously diphtheria patients or diphtheria materials, for whom the frequent administration of immunizing doses of antitoxin is undesirable. When employed, this active immunization consists in the administration of a series of three injections given subcutaneously at intervals of from five to seven days. Its use should be confined to such individuals as react positively to the Schick reaction. The mixture consists of a combination of from 85 to 90 per cent. lethal plus dose of toxin to each unit of antitoxin. The quantity injected successively is 1 c.c. Certain investigators advise the simultaneous injection of 1 billion killed diphtheria bacteria.

While diphtheria toxin-antitoxin under certain conditions is a desirable substitute for antitoxin, its use is sharply contraindicated as a treatment for clinical diphtheria; also it is without significant value as a treatment for diphtheria carriers.

3. *Prophylactic Antitoxin.*—The promiscuous use of immunizing doses of antitoxin for all contacts with diphtheria cases without resorting to the use of the Schick reaction is unwarranted. The Schick reaction, rightly administered and rightly interpreted, is an accurate criterion for discriminating between susceptible and nonsusceptible individuals. A decisive negative Schick reaction almost invariably indicates a permanent immunity against diphtheria. Such individuals should not be given diphtheria antitoxin. The practice not only wastes valuable and expensive antitoxin, but also sensitizes unnecessarily a large number of individuals. However, the frequently encountered apprehension lest anaphylaxis occur is for the most part unwarranted. The reaction from an initial administration of antitoxin is rarely severe, and the duration of sensitization is short. Persons known to have received serum of any kind at any prior time may be desensitized through the subcutaneous administration of minute doses (0.25, 0.5 and 1 c.c. doses) at half hour intervals. This procedure, however, is rarely necessary either for immunization or for clinical use of antitoxin when the antitoxin is administered subcutaneously or intramuscularly.

4. *Virulence Tests.*—After the detection of a contact carrier, it is possible, if deemed expedient, to isolate in pure culture the diphtheria bacillus, and after repeated transplants on specially designed mediums determine the relative toxicity in terms of its action on guinea-pigs. This process will demonstrate that by far the greater number of carriers harbor organisms of scant toxicity. As a routine procedure this is inadvisable, on account of its tediousness and more especially on account of the fact that no evidence is in hand to show that avirulent organisms harbored in one throat may not display higher virulence when acquired in another throat. If virulence tests are carried out, the nonvirulent carriers detected should not be released until free of organisms.

5. *Cultural Methods.*—The swab contact made for the purpose of obtaining cultures should not be confined to the throat, but should include the nasopharynx as well. Cultures made from the nasopharynx plus cultures made from the throat will demonstrate a higher percentage of positive carriers than cultures made from the throat alone. If the number to be examined at any one time is small, separate nasopharynx and throat cultures should be made. However, when it is necessary to examine large numbers of individuals, from the point of view of economy in materials, labor and time, it is more practical to make a combination contact of nasopharynx and throat on one swab. For this purpose the bent wire swab is desirable. Since the diphtheria organism may be harbored deep in the tonsillar crypts after having cleared up on the surface of the tonsil, it is desirable that the swab always be small so as to penetrate more deeply into the tonsillar crypts. Loeffler's medium is the culture medium of choice for routine examination. So also Neisser's method of staining affords a maximum of accuracy in detecting organisms, with a minimum of technical difficulty in preparing the stains and in staining.

6. *General Measures.*—Apart from the specific measures outlined above, much may be accomplished in the way of diphtheria prophylaxis by careful general sanitation relative to such matters as bed spacing, ventilation, drinking water facilities, and the prevention of ordinary sore throats. It is an especial function of the medical officer on duty with troops to give consideration to complaints of sore throats and to see that suspicious throats are brought to the attention of the public health laboratory.

PROTECTIVE PROCEDURES IN FORCE AT CAMP SHERMAN

The measures grouped below obviously cannot be carried out in full for every detected case. They represent the optimum of protection which is approached as completely as the conditions for the several cases permit.

A. *Procedures Adopted in Line Organizations After the Diagnosis of a Case of Diphtheria.*—It is purposed to minimize the danger of spread of contagion and at the same time interfere as little as possible with the organization in the performance of its duties. The latter consideration is a factor that the zealous public health worker is apt to neglect.

1. The detection of one or two cases does not call for a quarantine of the organization (company, battery, troop, detachment, etc.).

2. All known immediate contacts of the patient are segregated at once. No fixed rules can establish who contacts are. Under immediate contacts are included:

(a) Men sleeping on either side and across from the patient. If the patient sleeps in a small room, all occupants are included.
(b) Messmates on either side and opposite to the patient.
(c) Fellow workers who have continually been in close contact with the patient.
(d) Any intimate comrades with whom there has been frequent close contact.

The total number of contacts usually averages from ten to twelve.

3. Schick tests are made on all segregated contacts. Cultures are made both from the nasopharynx and from the tonsillar region of all the segregated men. Masks are worn by all men from the time of their segregation, in order that noncarriers may not be unduly exposed during the period of observation.

4. The following morning the cultures are examined. In the event of the detection of any carriers, they are transferred immediately to the hospital. Their further disposition is considered below. All negatives are released for duty.

5. At the expiration of approximately thirty-six hours, the Schick reactions are observed in these men, and if any are positive, prophylactic doses of antitoxin are administered. Usually not more than one or two give a positive Schick reaction.

6. The medical officers on duty with these troops are instructed to inspect the throats of all men of the organization for suspicious throats during the ensuing ten days.

B. *Procedures Adopted in Hospital Wards in Which Cases of Diphtheria Appear, the Patient Being Able to Be Transferred Immediately to the Diphtheria Ward.*—More complete methods may be instituted here since the men have no duties to perform; also, more exact methods are desirable from the fact that such men on account of being diseased are probably of lower resistance and more liable to diphtheria infection.

1. The patient is removed from the ward to the diphtheria ward.
2. The ward is not quarantined.
3. The close contacts are noted, and cultures and Schick tests are made.
4. If the ward is not already masked, all patients, orderlies, nurses and ward surgeons are required to wear masks during the period of observation.
5. No patient is transferred from the ward until his culture is reported negative. New patients are masked on admission to the ward.
6. The following morning, cultures are examined. If carriers are detected, these are at once removed from the ward and cultures made of the entire ward for further carriers. Schick tests are caried out on patients in the ward.
7. Prophylactic doses of antitoxin are administered to the small number showing a positive Schick reaction.

C. *Procedure in Ward Where Diphtheria Patient Is Too Ill to Be Transferred to Diphtheria Ward.*—

1. The entire ward is quarantined. All quarantines for diphtheria are instituted and controlled by the public health laboratory.
2. The patient is placed in a single room in the ward until he is able to be transferred. Cultures and Schick reactions are made of the entire ward.
3. If not already masked, all patients, orderlies, nurses and the ward surgeon are required to be masked.
4. On examination of cultures, any carriers detected are transferred to the diphtheria ward if their condition warrants; otherwise they are placed in cubicles.
5. Repeated examinations are made by cultures at two day intervals.

When the patient's condition warrants, he is removed to the diphtheria ward. After his removal, two negative examinations of the ward are obtained prior to release from quarantine.

D. *Procedures Adopted for Diphtheria Suspects Sent to the Hospital for Diagnosis.*—

1. All suspects are masked on entering ambulances bringing them to the hospital.
2. Such patients are held in the observation ward in cubicles until a laboratory report can be made.
3. Since the membrane of Vincent's angina simulates in many respects the membrane of diphtheria, a clinical diagnosis of diphtheria, followed by the administration of antitoxin, is not made in the absence of the laboratory diagnosis of diphtheria until smears from the patient's throat are examined for the organisms of Vincent's angina. A diagnosis of Vincent's angina may be made with such facility that no time is lost in the administration of antitoxin in case the condition proves to be diphtheria. It is not unusual to find diphtheria and Vincent's angina coexistent. The demonstration of the organisms of Vincent's angina does not exclude the existence of diphtheria.
4. On laboratory diagnosis, the patient is transferred from the observation ward to the diphtheria ward.

E. *Procedures Carried Out in the Diphtheria and Diphtheria Carrier Wards.*—

1. These wards are at all times quarantined, masked and cubicled.
2. Diphtheria patients, convalescent carriers and contact carriers should be segregated in distinct groups.
3. As the treatment of clinical diphtheria is a matter of common information, it is not entered into here.
4. The treatment of diphtheria carriers is taken up in a separate section below.
5. Owing to the fact that the larger number of carriers are physically fit, such individuals under supervision are assigned certain outside duties. Masks are worn during this work.
6. Cultures are made at five day intervals on all carriers. These cultures are made from swabs of the nasopharynx and tonsils. Treatment of carriers is discontinued twenty-four hours before cultures are made. Three successive negative cultures form the minimum requisite for release.
7. Two weeks after discharge from the hospital, every carrier is required to report to the outpatient department of the hospital for final culture. A number of carriers discharged after showing three consecutive negatives have shown themselves positive on a final culture made two weeks afterward, necessitating their return to hospital.

TREATMENT OF DIPHTHERIA CARRIERS

It is to be conceded that the treatment of diphtheria carriers is an unsatisfactory chapter in therapeutics. Many substances have been employed and successes reported by various workers, but general corroboration has not established the efficacy of any of these materials.

Treatment by spraying with the staphylococcus or other organisms has been reported by Bell,[3] Fay,[4] Lorenz and Ravenel,[5] Ravenel,[6] Rolleston,[7] Sanford,[8] Wiemer,[9], Womer[10] and others.

Roskam[11] advocates the use of desiccated diphtheria antitoxin administered by insufflation. The use of diphtheria endotoxin is recommended by Hewlett.[12] Vaccines are reported efficacious by Weil.[13] Various

3. Bell, A. J.: Arch. Pediat., 1916, **33**, 836.
4. Fay, J.: California State Jour. Med., 1913, **11**, 197.
5. Lorenz, W. F., and Ravenel, M. P.: Wisconsin Med. Jour., 1913, **12**, 35.
6. Ravenel, M. P.: Tr. XV Internat. Cong. Hyg. and Demog., 1913, **4**, 170.
7. Rolleston, J. D.: Brit. Jour. Child. Dis., 1913, **10**, 298.
8. Sanford, A. H.: Med. Rev. of Rev., 1913, **19**, 676.
9. Wiemer, R. G.: New York State Jour. Med., 1913, **13**, 95.
10. Womer, W. A.: Results of Staphylococcus Spray Treatment in Forty-Two Cases of Diphtheria Carriers, The Journal A. M. A., Dec. 27, 1913, p. 2293.
11. Roskam, J.: Arch. méd. belges, 1917, **70**, 406.
12. Hewlett, R. T.: Am. Med., 1915, **10**, 280.
13. Weil, A. J.: New Orleans Med. and Surg. Jour., 1915, **77**, 432.

other materials, such as kaolin, jasmine oil, Dobell's solution, ferric chlorid, diverse antiseptics and astringents have all been employed without establishing complete evidence as to their efficacy. Tonsillectomy as a therapeutic measure in getting rid of diphtheria organisms has been reported by Ballantyne and Cornell,[14] Friedberg[15] and others.

To us it appears established that the fundamental of carrier treatment is the placing of such carriers in the hands of competent throat specialists. The use of any materials, however efficacious, will not remove the organisms except on the surface of the tonsils and throat. The application of materials is only infrequently made to include the nasopharynx, and even less frequently to penetrate into the crypts of the tonsils, adenoids and perieustachian tissues. The required number of negative cultures may be obtained after the use of many antiseptic materials, only to have the organisms reappear through extension from a retained focus deep in some crypt. Cultures from the interior of excised tonsils of diphtheria carriers repeatedly have exhibited viable diphtheria bacilli when surface cultures indicated an absence of such organisms. Diphtheria carriers should be referred as a routine to a medical officer of the throat department, who will make examinations for and treat any ulcers or crypts in the tonsillar or adenoid tissues. In case the tonsils are badly involved, tonsillectomy is the procedure of choice, and should early be resorted to. When the general pathologic condition of the throat is adequately cared for, the state of being a carrier of diphtheria may be expected to clear up under treatment with various of the above-named methods. In this hospital during the period prior to that covered by this report and during the first month covered by this report, no especial consideration was given to general throat conditions. No masking of patients was done, no outside work or setting-up exercises were given. On admission of carriers to the hospital, a prophylactic dose of antitoxin was administered. The treatment included the use of various astringent applications, gargles of saline and hot Dobell's solution. During this period certain carriers remained in the hospital more than three months, and the average number of days in the hospital was fifty-five for diphtheria cases, in contrast to twenty-three days for the months of February, March, April and May.

Beginning at approximately February 1, an effort was made to standardize the treatment of all diphtheria carriers. The measures noted in Paragraph E of the foregoing section were instituted. The administration of antitoxin to carriers was discontinued as ill advised. Medical treatment then in vogue was discontinued as unsatisfactory. Treatment was especially directed to the elimination of existing open throat lesions. Tonsillectomy was carried out in a number of cases with a quick termination of harboring diphtheria organisms in all cases. In addition, a systematic treatment with chloramin-T (chlorazene) was inaugurated. This use of chlorazene in the treatment of diphtheria carriers was anticipated by Dunham and Dakin[16] without, however, being used in any actual diphtheria carrier cases. Its application, as we have employed it, consists in the use of an aqueous solution of 0.25 per cent. strength, administered as a gargle three or four times daily. In certain cases, the application was made by throat specialists to insure the reaching of remote points in the nasopharynx. The gargling was followed with an oily spray of dichloramin-T of 2 per cent. strength. It may not be maintained that the chloramin action is exclusively responsible for the appreciable reduction of days in hospital of carriers. This is in part due to the chlorazene-dichloramin-T treatment and in part to the general painstaking systematizing of the entire care of such patients. Through the use of these several described procedures, it has been possible to return the carriers to duty after an average of twenty-three days in hospital. During the month of May our systematizing of treatment made it possible to discharge all diphtheria patients (sixteen in number) after fifteen days in hospital, and all carriers (twenty-nine in number) after sixteen days in hospital.

14. Ballantyne, C. C., and Cornell, B. S.: Brit. Med. Jour., 1917, **2**, 686.
15. Friedberg, S. A.: Removal of Tonsils and Adenoids in Diphtheria Carriers, THE JOURNAL A. M. A., March 11, 1916, p. 810.
16. Dunham, E. K., and Dakin, H. D.: Brit. Med. Jour., 1917, **1**, 865.

SUMMARY

1. With reasonable precautions, diphtheria is unlikely to become a serious menace to the health of army camps.

2. During the five months covered by this report, sixty-three cases of clinical diphtheria occurred, with no deaths; 3,215 exposed persons were examined, eighty-nine of whom proved to be carriers; the number of carriers detected is 2.76 per cent. of the number of exposed persons examined.

3. The employment of the system for the care and treatment of diphtheria carriers described in the foregoing has reduced the average stay in hospital for convalescent carriers from fifty-five days in the first month of this report to fifteen days in the last month of the report, with an average for the four months of twenty-three days. The period in hospital for contact carriers has been reduced to sixteen days for the last month of the report, with an average of twenty-three days for four months.

4. The procedures described have greatly facilitated the early return of diphtheria patients and diphtheria carriers to their organization, physically fit for duties and training.

Reaction Following Administration of Neo-Arsphenamin (Neodiarsenol Brand).—A strong married woman, aged 36, weighing 175 pounds, presented herself for treatment for the secondary stage of syphilis with a 100 per cent. Wassermann reaction. During the fifteen months preceding she had received six intravenous injections of the German-made neosalvarsan without any reaction. One ampule of 0.3 gm. of the neodiarsenol brand of arsphenamin was dissolved in 10 c.c. of distilled water previously boiled and then cooled to body temperature. The solution was cloudier than the imported product. Thirty seconds after the entire dose was given the patient began to gasp for breath and complained of tingling in her fingers and hands. She became almost pulseless, her pupils dilated, and her eyes rolled back as if she were dead. The stimulant closest at hand was aromatic spirit of ammonia, which I placed to her nose. She began to rally after a minute, and then became nauseated but could not vomit. Her head began aching very severely. I gave her a hypodermic strychnin sulphate, 1/30 grain, for her pulse was still very weak and rapid. This dose was repeated fifteen minutes later. After one and one-half hours she was able to ride home in a car. All symptoms had abated except weakness and the headache, which remained about five or six hours, after which she was perfectly normal.—K. M. RICHARDSON, M.D., Rankin, Ill.

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SATURDAY, JULY 27, 1918

THE DECLINING BIRTH RATE AND THE MEDICAL PROFESSION

The appalling losses of human life that all of the nations now at war are experiencing cannot fail to awaken thoughts as to the ultimate effects of these sacrifices on the population of the diverse countries in the decades to come. War almost inevitably leads to a decline in birth rate; but it is by no means the only, if, indeed, it is the foremost factor in the more permanent variations in the increment of a nation's population. Long before the present conflict the situation in France was deemed sufficiently serious, from a national standpoint, to require the appointment of a commission to study the causes of the growing depopulation of a country that once surpassed its rival neighbors in the numbers of its people. Less than a century ago the birth rate for France was 30 per thousand of population. When the present war began it was 18, while the death rate was 19.6, thus exceeding the birth rate.

Decrease in population, or failure to gain in numbers, may obviously be due to high mortality as well as to a declining birth rate. The figures just quoted are not such, however, as exhibit an inroad of pestilence and plague. We must seek the explanation in other factors than an undue increment in deaths. According to a competent American statistician,[1] the birth rate has declined in virtually every country of the civilized world during the past fifty years. The untutored reader may imagine, in view of our large increases in population, that such a statement is not applicable to the United States. But if we may believe the figures presented at the last meeting of the American Association for the Advancement of Science, there has been a marked and continuous reduction in the birth rate of this country for a period of years. According to Wilcox, at the beginning of the century there were 976 children under 5 for every thousand women between the ages of 15 and 44, whereas in 1910 the number was only 508 per thousand women at these child-bearing ages.

1. Dublin, L. I.: The Significance of the Declining Birth Rate, Congressional Record, Jan. 11, 1918.

From a careful statistical analysis of the best data furnished, namely, those of the state of Massachusetts, it is evident that the decline in birth rate in the United States has been, as elsewhere, selective in character. Dublin[1] finds, first, that there has been a continuous decrease in the birth rate during the last forty years; and, secondly, that this decrease has been most marked in the native stock. In 1910, the native stock had a birth rate of 14.9 per thousand; the foreign-born birth rate was 49.1 per thousand. In the same year the native death rate was 16.3 per thousand, while the foreign death rate was only 15.4. There was thus, according to Dublin, an excess of deaths over births corresponding to a net annual loss of a little more than 0.1 per cent. in the native stock, while there was an annual increase of 3.4 per cent. among the foreign-born population. Hence the conclusion that "the race stock which laid the foundations of our institutions during the critical period of our national existence is, in large areas of the country, no longer maintaining itself, and its place is being taken gradually but surely by foreign races which, as we have seen, are reproducing very rapidly."

The facts, then, indicate that a large part of the native stock of this country is not maintaining itself. It is, of course, a dangerous venture to discriminate between the social strata of our society. American public men have given too many indications of the virility and efficiency of sons of lowly origin to justify any class distinctions. We may hesitate to say, with Dublin, that the best blood of America is being thinned out constantly by the exercise of conscious limitations of birth and is being replaced by a stock of a different order. Who shall be the censor of "good blood" in the commonwealth? We may, however, fairly admit that those families in the population which, by economic and social standards, are best able to bear and rear families, fail to produce the number of offspring necessary to maintain a stable population. To the query as to how many children are to be expected in order that the population may suffer no material change, a tentative answer can be framed. Making allowance for deaths in infancy and childhood, for failures to marry or marriage beyond the reproductive period, and for 7 per cent. of sterile marriages, the average number of children that must be born per family is close to four.

The problem of maintaining larger sized families appeals to the state as a sociological study, as a matter of education in the needs of democratic institutions, and as a possible duty of citizenship. For the medical profession, as such, there is a peculiar concern in the relation of motherhood and its burdens to the questions at issue. It may be that with the growing socialization of medicine, greater provision will be made for the education of women in the significance of family life and the better management of mothers in

the critical period of childbearing. Every thing that facilitates motherhood may be expected to become, in the long run, an economic asset to the nation. Says Dublin[1]:

> The bearing and rearing of children is costly, both in energy and in funds, and must act as a check on personal ambition and on the enjoyment of the freedom and pleasures of social life. A family of four children requires all the attention of the thoughtful and capable woman. Her success as a mother will be at the expense, in the majority of cases, of her achievement in other fields. It is not asking too much that such a woman should be favored with the admiration of the community in which she lives and not, as at present, with its commiseration and pity.

DIET AND TUMOR TISSUE GROWTH

Tumors are masses of growing tissue that develop more or less independently of the organs with which they may be most closely affiliated in topographic anatomy. They have therefore been described as autonomous in the sense that "their growth is self regulated without regard for the laws governing the nutritive condition of the host." This need not imply, however, that tumors in no way depend on their hosts, for obviously the pabulum from which a neoplasm is built up must be furnished to it somehow through the surrounding tissues. Whether the constructive units can in any degree be synthesized anew by the tumor cells, whether these cells have unique constructive powers that put them in a class by themselves, or whether they are dependent like other parasites on their host for the special building stones which in ultimate analysis are provided to an organism through the digestion of its foods, are problems of great importance which have repeatedly been debated of late. The questions have, indeed, been complicated rather than simplified by the growing recognition of the complexity of animal food requirements. They have often been summarized in THE JOURNAL so far as the most recent contributions to the science of nutrition justify a definite formulation. Drummond has tersely expressed the requirements in these words: The calorific value of the diet must be sufficient to supply the necessary potential energy. Sufficient nitrogen must be supplied in a form suitable for the building up or repair of tissue. This nitrogen must be supplied in a form which will insure an adequate supply of certain amino-acids which the animal organism is unable to synthesize for its own use. The diet must contain an adequate supply of inorganic salts capable of satisfying the mineral requirements of the animal. Certain substances, probably two in number, the nature of which is at present unknown, but which have been provisionally termed "accessory growth promoting substances," must be present in a sufficient amount.

It is now clearly established, owing especially to the pioneer work of American investigators in this field of research, that shortcomings in any of the items just rehearsed will lead to nutritive disaster of some sort. How will the tumor cells fare when the supply of the fundamentals of nutrition to the body as a whole is curtailed? Will they, too, experience a retardation of growth? Will they respond to inadequacies of the diet more or less promptly than the other tissues of the host by a cessation or inhibition of development? Will they retrograde? Or will they provide de novo whatever they may need by poaching on the surviving neighborhood cells and fluids? It need scarcely be pointed out that these inquiries are significant, because they might point the way to successful treatment of cancer by dietary management.

In the chemical investigation of tumors there has been detected little that indicates any important deviation of the chemical processes of tumors from those of normal cells of similar origin. This is the conclusion of Wells[1] in the latest review of the subject Likewise, he adds, the chemical composition of tumor tissue resembles closely, on the whole, the composition of related normal tissues. It is hardly to be imagined that the course of chemical changes is greatly different in tumor cells from that in normal cells, in view of the abundant evidence that the metabolic products of tumor cells are identical with those of the cells from which they arose. Thus, metastatic growths of thyroid tissue will produce thyroiodin in any part of the body, liver carcinoma metastases produce bile, tumors from the choroid or from pigmented moles produce melanin, etc. The capacity of tumor cells to produce complicated products of metabolic action specific for the parent cells from which they arose, as illustrated above, indicates beyond question that the course of their chemical activities is very much like that of normal cells.

There is a widely current opinion, based largely on crude clinical observations, that anything which leads to wasting or malnutrition in the host tends to impede the growth of tumor cells. We have in the past referred to experiments on animals with implanted tumors tending to show a modification of the development of the neoplasms by deficient diets which stunt the hosts. These results have been criticized in the sense that it is unjustifiable to conclude that the apparent inhibition is due to the lack of some specific substance in the ration rather than to general malnutrition. Recently Benedict and Rahe[2] have investigated the relation of an absence of vitamins in the diet to the neoplasm. They concluded that tumor cells have no power to synthesize these accessory substances when they are absent from the diet of the host; yet, as they noted, a certain amount of tumor growth occurred, presumably at the expense of the tissues of the animal, even during a vitamin-free regimen. In other words, the tumor cells appear to be as dependent on

1. Wells, H. G.: Chemical Pathology, Ed. 3, Philadelphia, 1918, p. 492.
2. Benedict, S. R., and Rahe, A. H.: Jour. Cancer Research, 1917, **2**, 159. Vitamins and Tumor Growth, editorial, THE JOURNAL A. M. A., Nov. 3, 1917, p. 1526.

exogenous supplies of vitamins as are the normal cells of the growing animal.

In an elaborate investigation at the Cancer Hospital Research Institute in London, Drummond[3] has given renewed attention to the possible importance of the plane of protein intake of the host, the character and amino-acid content of the protein constituent in its dietary, and the vitamin factors in relation to the growth of implanted tumors. Drummond found that in the event of a deficiency arising in the diet of the host, the tumor, provided it possesses a satisfactory blood supply, will continue to grow, although the host may be quite unable to do so. There is evidence that this proliferation will proceed at the expense of the tissues of the host, until these are no longer able to supply the missing units. When the host is unable to make good the deficiency, by drawing on its own reserves, the rate of tumor proliferation will decrease. There is no evidence that the cells of tumors possess powers of synthetic action which the normal cell of similar type does not possess. With their high growth potential they satisfy their requirement "by enforcing sacrifice of the tissues of the host." Other tissues possessing a high growth or functionating power are known to behave similarly at times; such are the uterus during pregnancy and the mammary gland during lactation. When dietary restrictions necessitate sacrifice, the embryo develops at the cost of other tissues. As Drummond has expressed it, established tumors invariably appear to possess the power of commandeering what part of the food supply of the host they require for their own use. Failing this source of nutrition it is usual to find the tissues of the host sacrificed to no inconsiderable extent in order to provide the requirements of the parasitic cells.

Thus far the dietary investigations have given little hope of alleviating the course of cancer. They are concordant in indicating that only the most drastic dietary restrictions, involving a very serious loss of weight on the part of the host, would have any retarding influence on tumor growth.

YEAST NUTRIENTS IN BREAD MAKING

Two years ago, investigators[4] at the Mellon Institute for Industrial Research announced that the addition to the ingredients of bread of a small amount of a mixture of calcium chlorid, ammonium sulphate and potassium bromate permits the use of approximately one half as much yeast as would otherwise be needed. They stated further that a goodly amount of sugar and flour was saved from unnecessary destruction by the action of yeast alone. As regards quality, texture, color and "bloom" the bread was regarded as superior. THE JOURNAL[5] at that time pointed out the advantage of a large annual saving of yeast and sugar, and also that even the relatively small restoration of mineral salts to a bread prepared from a demineralized patent flour was desirable from a medical point of view.

As soon as the salt mixture came into wide commercial use, however, its employment was attacked because of the alleged introduction in bread of "objectionable mineral ingredients." J. P. Street, chief chemist of the Connecticut Agricultural Experiment Station, therefore investigated the "advantages or disadvantages following the use" of a mineral yeast food.[6] In a rather exhaustive report of his examinations, Street[7] apparently demonstrated that the quality of the bread was improved irrespective of the grade of flour employed, and that the bread made with the yeast nutrients did not contain more moisture, as had been charged. Taking up the study of the respective mineral ingredients which composed the yeast food, it became necessary to learn the fate of the mineral salts in the bread and what effect, if any, they had on its wholesomeness. The principal yeast nutrient, calcium sulphate, was found in the finished product in the form of sulphate amounting to 0.135 per cent., or little less than twice the amount present in breads made without the addition of yeast nutrients. Commenting on this phase, Street says that "many of our common foods are deficient in lime, and while the slightly increased content of lime in the yeast nutrient breads has little practical significance, its effects, if any, would be beneficial rather than injurious." In the case of ammonium chlorid, it was found to be mostly utilized by the yeast; the slight amount not so utilized was in a quantity comparable to that present in many of our well known foods. The third active component, potassium bromate, seems, according to the Connecticut investigation, to be converted to potassium bromid in the bread. The amount of bromin—0.58 per hundred thousand parts—present in the form of bromid in bread made by the aid of the mineral salts is ridiculously small, as a large number of common natural food products contain as much or more; hence the physiologic effect is probably nil. As a result of his work, Street agrees with the statements of Winslow and Falk of the Yale Medical School, who state in substance that if the results of this experiment taken as a whole indicate any effect of calcium sulphate, ammonium chlorid and potassium bromid on the digestibility of bread, the effect is a favorable rather than an inhibitory one. "We may safely conclude that the digestibility of bread made with yeast nutrient

3. Drummond, J. C.: A Comparative Study of Tumor and Normal Tissue Growth, Biochem. Jour., 1917, **11**, 325.

4. Kohman, H. A.; Hoffman, Charles; Godfrey, T. M.; Asche, L. H., and Blake, A. E.: On the Use of Certain Yeast Nutriments in Bread Making, Jour. Indust. and Engin. Chem., September, 1916, p. 781.

5. Yeast Nutriments in Bread Making, editorial, THE JOURNAL A. M. A., Sept. 30, 1916, p. 1023.

6. The composition of the patented yeast food is: calcium sulphate, 25; ammonium chlorid, 9.7; potassium bromate, 0.3; sodium chlorid, 25; patent wheat flour, 40.

7. Street, J. P.: Experiments with Bread, Bull. 200, Conn. Agric. Exper. Sta., 1917, p. 113.

salts is not affected by the yeast food used in its manufacture."

From the standpoint of economics, it is interesting to note that in making 1,000 loaves, weighing 1½ pounds each, and using 4⁹⁄₁₀ pounds of the nutrient salt mixture, there was saved 9½ pounds of flour, 4⅕ pounds of sugar and 5⅕ pounds of yeast. Considering the millions of loaves made annually, such a conservation, when economy is national policy, is well worthy of careful attention. While the question is primarily an economic one, it has at the same time an indirect interest for the medical profession, since the possibility of harm to health exists. The work so far done does not indicate any probability of physical harm; at the same time it is well to await further developments before reaching any definite conclusion.

PREOPERATIVE PURGATION

The recent communication by Peet[1] in THE JOURNAL, relating to the subject of catharsis before surgical operations, supplements the contentions of Alvarez[2] of the Hooper Foundation for Medical Research that purgation as a routine preoperative procedure should be abolished. In his studies on the intestine, Alvarez had noted that after vigorous catharsis the isolated musculature is no longer as responsive as normally to stimuli and is fatigued with greater readiness. The bowel as a whole may become unduly filled with gas and fluid, the circulation of the intestine somewhat impaired, and the peristalsis deviated from its usual manifestations. In this way it was believed that much of the gas distention, postoperative ileus, and perhaps the nausea and vomiting may be partially accounted for in patients who have undergone surgical operations.

Peet has accentuated the difficulty thus encountered by asking what is expected to be gained through the preparatory evacuation. We suspect that most surgeons would be compelled to answer this query either by a meaningless platitude or by a confession of ignorance. The evidence for a need of or advantage in the customary "emptying" of the bowel by laxatives is, indeed, not easy to find. Sterilization of the interior of the intestine is out of the question as a practical possibility, and there is little indication that anything seriously toxic is removed by such catharsis. On the other hand, it is not unlikely, in view of these studies, that this procedure, attended by fatigue, and often by loss of sleep, is a positive detriment to the patient and an actual cause of some of the familiar postoperative discomfort, if this mild term sufficiently designates the distress referred to. Peet significantly comments on the uneventful convalescence of patients after emergency operations for which no preliminary therapy was instituted.

A further item is worthy of consideration in this connection. Catharsis leads to loss of water and intestinal secretion. If this is not compensated there may be distress from this cause. Crile[3] has lately remarked, in reference to postoperative feeding, that even at this stage of medical knowledge the supreme value of water is not fully appreciated and its administration is often neglected or mismanaged. How much more serious is this incrimination when preoperative losses are freely induced by purgation. At most, therefore, Peet recommends simple enemas as a means of emptying the bowel before operation. If his contention is correct that, where the more drastic habitual procedure is abandoned, postoperative thirst, nausea and vomiting, abdominal distress and gas pains occur much less frequently, the appeal to abolish something sanctioned by custom deserves to be heeded.

Current Comment

THE SALIVA AND DENTAL DECAY

Decay of the teeth offers a serious problem not only to the dentist but also to the physiologist and pathologist, who are primarily interested in the etiologic factors. The microbiology of the mouth cavity has received special attention since the early days of modern bacteriology. The possible relation of the oral micro-organisms, which include the animal protozoan parasites, intermediate forms, such as spirochetes, and true bacteria, to dental caries has often been suggested without being clearly demonstrated. According to Kligler,[4] the early stages of caries are characterized by a decided alteration in the relative abundance of types as they occur in deposits on normal teeth. Three forms, the *B. acidophilus*, the *C. placoides* and the *L. buccalis*, are prominent in the carious enamel deposits. In pulp decay an anaerobic, spore-bearing, putrefactive bacillus, *B. putrificus*, is always prominent. The organisms prevalent in primary enamel decay very actively, ferment the common sugars and bring about comparatively great dissolution of powdered tooth. The organisms in deposits on normal teeth and in the later stages of caries exert either slight effects or none at all in these relations. There is, further, the possibility of a systemic factor predisposing to dental caries. This problem has received some attention from Gies[5] and his collaborators at Columbia University, and they have come to a tentative conclusion: "That the systemic condition of the individual is an important factor in susceptibility to dental caries is a conviction that we cannot dismiss.

1. Peet, M. M.: Rational Preoperative Treatment with Special Reference to Purgation, THE JOURNAL A. M. A., July 20, 1918, p. 175.
2. Alvarez, W. C., and Taylor, F. B.: Changes in Rhythmicity, Irritability and Tone in the Purged Intestine, Jour. Pharmacol. and Exper. Therap., 1917, **10**, 365. Alvarez, W. C.: Surg. Gynec. and Obst., 1918, **26**, 65.
3. Crile, G. W.: Dietotherapy, edited by W. E. Fitch, 1918, **3**, 646.
4. Kligler, I. J.: Chemical Studies of the Relations of Oral Micro-Organisms to Dental Caries, 4, A Biochemical Study and Differentiation of Oral Bacteria, with Special Reference to Dental Caries, Jour. Allied Dental Societies, December, 1915, p. 457.
5. Tr. Dental Soc., State of New York, 1915, p. 161, ff.

Nevertheless, direct external attack upon teeth by micro-organisms appears to be the most important single factor in the carious processes."[6] A third possibility in the etiology of dental caries lies in the saliva. This has been the subject of vigorous debate in the past few years. In 1915, Marshall[7] proposed what he termed a "salivary factor" as an index of immunity from caries. It represented a ratio between the mathematical expression for the total neutralizing power of "normal resting" saliva and normal "activated" saliva —that provoked by special stimulation—in the same individual. Assuming that the saliva is amphoteric, Marshall concluded that for it to be a factor in protecting the teeth it must neutralize either acid or alkaline substances as taken into the mouth, and that it is the degree of this power to maintain a neutrality in the mouth that is indicative of the susceptibility to caries. This hypothesis has been the subject of vigorous differences of opinion.[8] The tendency has been to discredit the value of any such salivary factor. The most recent investigators[9] of the problem at the Forsyth Dental Infirmary for Children, Boston, have demonstrated anew that the saliva of persons with teeth immune to decay varies, as does also the saliva of persons with carious teeth; that saliva may neutralize substances taken into the mouth and that the average immune mouth has the greater power of neutralization; but the ratio of resting and activated saliva in immune mouths does not vary enough from that of carious mouths to prove that this ratio is indicative of the production and maintenance of immunity from caries in any individual. Evidently other directions must be sought for new attacks on an ever present problem.

THE INTERMEDIATE HOST OF THE TYPHOID BACILLUS

Last week in Tonics and Sedatives—probably where the matter belongs—appeared part of a column of editorial comment called "Today," written by Arthur Brisbane of the Hearst papers. This column deals with simple and clearly understood matters like government ownership, the proper development of an aeroplane program and the meaning of Prussian peace talk. As a sort of climax were the few paragraphs on the eating of horse meat which the Tonics and Sedatives reprinted. After confounding a "scientist," who was said to have declared that there is no reason for not eating horse meat, by telling him that he was "mistaken," the omniscient one continues: "The civilized world as a whole opposes the use of horseflesh, and there is usually a substantial reason for a feeling so widespread. The typhoid germ develops in the horse, not elsewhere. Man can get typhoid only from the germ that has lived in the horse's body." It is hardly necessary to state that not one of these statements is approximately correct, that no single case of typhoid has ever been traced to infection from the horse, and that there is no evidence whatsoever that the typhoid germ must pass a necessary stage of its development in that animal. The only experiments of which we are aware that bear on this matter are those in which calves were fed large numbers of typhoid bacilli and were entirely unaffected, the bacteria dying out promptly in the alimentary tract of these animals. Reckless misinformation may do harm if confined to unverifiable politics; but if allowed to display itself in the field of natural science, it can only raise ungodly laughter.

UREA CONCENTRATION IN THE TOXEMIAS OF PREGNANCY

It requires more than a slight degree of emboldening confidence to induce even the accomplished investigator to venture into the domain of hypothesis regarding that confusing phenomenon, the toxemia of pregnancy. There is undoubtedly a severe intoxication involved; there is much in the way of chemical evidence as well as symptomatic indications to relate the disorder to a uremia with renal disturbance and impaired excretory functions; and the relief that so often follows removal of the uterine contents strongly suggests the participation of either placenta or fetus or both in the etiology. However, the problem is still in a stage in which more facts, and particularly more accurate as well as new ones, are needed. A contribution in this direction has lately been furnished by Hammett[1] at the Harvard Medical School through the demonstration, in a liberal number of cases, that the placentas from women suffering from a toxemia of pregnancy are generally higher in urea content than are the placentas from women whose course of gestation has been normal. It is unlikely that this represents a purely local accumulation of urea, because the extremely ready diffusion and distribution of urea throughout the body has been clearly demonstrated. The results do argue, however, for a generally increased concentration of urea in the toxemias of pregnancy. It is plain, says Hammett, that they are accompanied by a severe disturbance of nitrogen metabolism, the exact foci of which are yet to be discovered, and which results in an increased urea content of the placenta and in all probability of the body as a whole.

6. Gies, W. J.: Chemical Studies of the Relations of Oral Micro-Organisms to Dental Caries, 6, Retrospect and Prospect, Jour. Allied Dental Societies, December, 1915, p. 464.

7. Marshall, J. A.: The Neutralizing Power of Saliva in Its Relation to Dental Caries, Am. Jour. Physiol., 1915, **36**, 260.

8. Some of these are referred to in the paper by Gies and collaborators: Jour. Allied Dental Societies, 1917, **12**, 212.

9. Howe, P. R., and Keniston, M. R.: The Salivary Factor in Relation to Dental Caries, Am. Jour. Physiol., 1918, **46**, 28.

1. Hammett, F. S.: The Urea Content of Placentas from Normal and Toxemic Pregnancies, Jour. Biol. Chem., 1918, **34**, 515.

To Bridge Defects in Nerves.—F. Cahen has had good results from utilizing a sensory nerve to bridge the gap in a nerve. The success was complete in two of four cases in which he thus bridged a 10 or 12 cm. defect in the lower ulnar nerve by severing the cutaneous nerve, opposite the lower stump of the ulnar nerve, and fastening the central end of the cutaneous to this lower stump, and then fastening with a few stitches the central stump of the ulnar to the trunk of the cutaneous. In six months the functions of the ulnar nerve were almost completely restored. He thinks that the results would have been equally brilliant in all the cases if he had been more careful to cut the stumps up into sound tissue. (From summary in the *Correspondenz-Blatt* of his article in the *Zentralblatt für Chirurgie*, 1917, No. 35.)

Medical Mobilization and the War

Report on Trench Fever

Dr. Alfred E. Shipley, secretary of the medical advisory committee of the American Red Cross, writes that a cable from Dr. Alexander Lambert gives the following information regarding the trench fever committee: The "trench fever committee headed by Major Richard P. Strong have completed their investigation, and demonstrated beyond facts published in February that trench fever is caused by a resistant filterable virus. Louse can transmit fever by bite alone and also artificially by rubbing into cutaneous abrasions excrement of louse. Virus present not only blood plasma, but also in urine, and sometimes sputum or saliva of trench fever patients. Louse need remain on man but short time and patient come down with disease long after free from lice." The full report will be published later.

Further Facts Regarding the Death of Lieut. A. P. H. Sage

THE JOURNAL published on June 29 a notice of the death of Lieut. A. P. H. Sage, Memphis, Tenn., while on duty with the British field ambulance in France. The *Lancet* for June 29, just received, publishes the death notice of Capt. E. E. Meek, C. A. M. C., and in describing his death states:

"He had been granted transfer to England on account of health and on urgent personal grounds when an incendiary bomb from enemy aircraft struck the hospital building in which he was working. The operating theater was completely demolished and Captain Meek was killed along with Lieut. A. P. H. Sage, M. R. C. (U. S. A.), who was assisting him, as well as the nursing sisters, theater orderlies, and stretcher-bearers. The wreckage burst into flames, but casualties were limited to those caused directly by the bombs."

Women Health Officers for Duty in Munitions Plants

The War Department authorizes the following statement from the Ordnance Department: Women health officers, whose duty will be to see that the thousands of women workers in munitions plants are kept healthy and their output of war materials thus maintained at the peak of production, are to be trained under the direction of the women's division of the industrial service section of the Army Ordnance Department. The work to be done is along entirely new lines. Many of the plants already have physicians and nurses to care for employees when they are ill, but they do not have health experts with a knowledge of the psychology of women workers to do constructive, preventive health work among the women.

Statistics on Medical Teaching and Students

The deans of the well recognized medical schools have been requested to send to the Surgeon-General lists of all teachers appointed in the schools for the session 1918-1919, indicating those considered essential for effective teaching. It is stated that until more definite plans are announced the teachers thus indicated will be included in the reserve list, the members of which, if in the Medical Reserve Corps, will not be called into active service without personal approval by the Personnel Division. Statistics relative to age, degree in medicine, year of graduation, rank in the Army or other government service, are to be furnished. The deans are also instructed to furnish information relative to the number of teachers in each department and the number really considered essential for each department; also a statement of the principles guiding the authorities in their decision as to the choice of essential teachers.

The deans have also been instructed to send to the Surgeon-General's Office before October 30 a list of all students in the schools at that time relative to their status in the Medical Enlisted Reserve Corps or nonenlistment, and whether or not any conditions are standing against individual students. Another report is to be asked for February 10. It is desired not to leave the intellectually incapable or indolent student on inactive status until the end of the school year.

Medical Meetings at Camp MacArthur

Lieut.-Col. A. W. Williams, M. C., U. S. Army, assigned as division surgeon of the Seventh Division at Camp MacArthur, Texas, arranged for a series of medical officers' meetings to be held regularly near the officers' quarters at the base hospital. Programs were constructed that the various medical officers might gain an insight into the medical work of the entire camp. The program for recent meetings has included the following papers: "Tuberculosis Examination Methods in the Army," Major I. S. Kahn, M. R. C.; "War Neuroses," Major Frank E. Leslie, M. R. C.; "Experiences of a Medical Supply Officer in the French Army," Lieutenant Picard; "Abdominal Surgery," Major Howard, M. R. C.; "Demonstration of Bárány Tests for Aviators," Captain Burns, M. R. C.; "Lobar Pneumonia," Lieut. Nathan S. Schiff, M. R. C.; "Medical Treatment of Gastric Ulcer," Major Charles G. Lucas, M. R. C.; "Meningitis," Major Leon S. Medalia, M. R. C.; "Carrel-Dakin Treatment of Wounds," Lieut. Harold B. Markham, M. R. C.; "Gases Used in Warfare and How to Combat Them," Captain Thompson, and "Report of the 1918 Meeting of the American Medical Association," Major Campbell.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES*

From Telegraphic Reports Received in the Office of the Surgeon-General for the Week Ending July 12, 1918

		Last Week
1. ANNUAL ADMISSION RATE PER 1,000 (disease only):		
All Troops	992.7	947.6
Divisional Camps	995.0	985.5
Cantonments	1,064.4	926.0
Departmental and Other Troops	966.76	952.5
2. NONEFFECTIVE RATE PER 1,000 ON DAY OF REPORT:		
All Troops	38.74	37.8
Divisional Camps	41.3	36.5
Cantonments	40.7	37.7
Departmental and Other Troops	37.35	38.9
3. ANNUAL DEATH RATE PER 1,000 (disease only):		
All Troops	3.01	3.19
Divisional Camps	2.64	2.39
Cantonments	3.40	3.87
Departmental and Other Troops	2.50	2.72

*Including Porto Rico.

ANNUAL RATE PER 1,000 FOR SPECIAL DISEASES

	All Troops in U. S., Week Ending July 12, 1918	Departmental and Other Troops, Week Ending July 12, 1918	Divisional Camps, Week Ending July 12, 1918	Cantonments, Week Ending July 12, 1918	Expeditionary Forces, Week Ending July 4, 1918
Pneumonia	6.57	4.8	7.94	7.73	9.02
Dysentery	0.73	0.73	1.7	0.34	0.22
Malaria	7.3	4.38	13.6	7.22	0.9
Venereal	145.09	168.1	105.5	151.68	24.68
Paratyphoid	0.03	0.0	0.0	0.08	0.0
Typhoid	0.4	0.83	0.19	0.17	0.28
Measles	30.22	16.7	39.1	38.77	10.67
Meningitis	0.66	0.52	0.19	1.02	0.85
Scarlet fever	1.76	1.88	0.56	2.29	2.21

COMMISSIONS ACCEPTED, MEDICAL RESERVE CORPS, U. S. ARMY

Previous lists published in THE JOURNAL, June 1, 22 and 29, and July 13 and 20.

ALABAMA

Anniston—Leyden, H. A.
Athens—Anderson, W. H.
King, C. O.
Birmingham—Gaston, C. D.
Lowrey, J. M.
Mason, E. M.
Daleville—Windham, L. A.
Ensley—Gaston, A. L.
Geneva—Vaughan, A. E.
Jasper—Shepherd, R. H.
Lineville—Barfield, J. M.
Lisman—Moore, W. N.
Mobile—Gaines, M. T.
Mount Vernon—Marshall, B. E.
Plantersville—Pickering, A. B.
Prattville—Smith, M. D.
Talledega—Salter, C. L.

ARIZONA

Clifton—McPheeters, E. R.
Flagstaff—Manning, G. F., Jr.
Fort Defiance—Monk, J. A.
Glove—Wales, J. L.

ARKANSAS

Arkadelphia—Wallis, C.
Hot Springs—Sanders, T. E.
Melwood—King, J. A.

CALIFORNIA

Berkeley—Cheney, M. C.
Brea—Davis, W. W.
Calexico—Sims, P. N.
Chico—Enloe, N. T.
Dorris—Atkinson, A. A.
Eureka—Chain, J. N.
Pine, J. W.
Fresno—Collins, C. D.
Mitchell, C. O.
Pettis, J. H.
Williams, J. C.
Glendale—Flint, J. L. F.
Long Beach—Buell, A. W.
Keller, W. F.
Los Angeles—Biggs, E. L.
Cleeves, M.
Hall, E. H.
Hartford, W. S.

Los Angeles—Miller, U. G.
Moore, A. W.
Myers, T. C.
Robinson, T. C.
Ronan, R. R.
Tebbetts, J. H.
Wight, T. H. T.
Monterey—M'Cauley, M.
Oakland—Koford, H.
Orange—Bradshaw, A. F.
Pomona—Swindt, J. K.
Redlands—Avey, J. L.
Sacramento—Higgins, A. F.
Twitchell, E. W.
San Bernardino—Ham, J. G.
San Francisco—Baronides, R. R.
Hopkins, E. K.
Eaves, J.
Seaforth, E. W.
Seligman, L. L.
Thibodeaux, J. A.
Wilcox, R. W.
San Jose—Atkins, S. M.
Baker, M. D.
Barry, G. L.
Beattie, J. I.
Wise, P. L.
Santa Ana—Brother, H. N.
Santa Maria—Coblentz, L. B.
Stockton—Hammond, R. R.
Wagner—Graham, L.
Whittier—Miller, B. F.

COLORADO

Boulder—Gillaspie, C.
Canon City—Little, W. T.
Colona—Barclay, H. A.
Colorado Springs—Bortree, L. W.
Denver—Cooper, H. S.
Knoch, N. H.
McCarroll, J.
Philpott, J. A.
Wade, J. H.
Wilcox, H. W.
Pueblo—Woodbridge, J. H.
Seibert—Bensinger, C. H.
Trinidad—Espey, J. G.

CONNECTICUT

Hampton—Marsh, A. D.
Hartford, Cogswell, E. S.
Purinton, C. O.
Middletown—Melvin, G. M.
New Haven—Blake, E. M.
Sheahan, W. L.

DISTRICT OF COLUMBIA

Washington—Adams, F. D.
Damnall, J. R.
Johnson, L. A.
Ketcham, C. S.

FLORIDA

Jacksonville—Bowen, F. J.
West Palm Beach—Peek, L. A.

GEORGIA

Americus—Allen, H. B.
Athens—Holliday, J. C.
Atlanta—Carter, H. G.
Fanning, O. O.
Chipley—Parham, L. G.
Columbus—Cooke, W. L.
Edge, C. L.
Dawson—Chappell, G.
Kenyon, O. T.
Fitzgerald—Ware, R. M.
LaGrange—Tood, R. W.
Odessadale—Williams, V. G.
Savannah—Harris, R. V.
Train, J. K.
Waring, T. P.
Tunnel Hill—Carr, J. H.
Zebulon—Head, M. M.

IDAHO

Boise—Titus, W. S.
Elk River—Dimon, I.
Kendrick—Hoyt, J. E.
Wallace—Mowery, H. C.
Quigley, F. L.

ILLINOIS

Baylis—Kuntz, W. W.
Carthage—Knight, L. G.
Champaign—Davis, C. S.
Chatsworth—Sloan, O. J.
Chicago—Albers, E. H.
Adler, H. M.
Aitken, C. S.
Appelle, C. G.
Austin, R. S.
Beyerlein, A. L.
Blum, J. M.
Buck, R. H.
Chessman, F. N.
Courtney, C. H.
Emons, H. C.
Fillis, B. E.
Formusa, A. C.
Kerr, N.
Kleutgen, A. C.
MacGregor, D. E.
May, H. F.
Meyer, J.
Chicago—O'Connor, W. A.
Pearlman, S.
Quitmeyer, J. C.
Roche, R. A.
Sarma, P. J.
Scholter, E. A. W.
Seyl, H. H.
Shackleton, W. E.
Walk, F. D.
Watterson, W. H.
Wilson, J. W.
Decatur—Taylor, C. M.
East Moline—Johnson, G. F.
East St. Louis—McNary, W. F.
Fairfield—Murphy, L. J.
Fairview—Crouch, W. L.
Farina—Bassett, L. C.
Farmingdale—Lutyens, H. E.
Fiott—Taylor, A. B.
Granville—Wilson, H. M.
Harvel—Kilton, W. B.
Joliet—Chmelik, F. J.
Kankakee—Badger, P. R.
Lanark—Hendricks, E. L.
Latham—Pope, H. O.
Littleton—Justus, W. F.
Mackinaw—Fast, H. DeW.
Marseilles—Weirick, A. J.
Maywood—Coffman, S. W.
Melvin—Boshel, H. N.
Moline—Freeman, D. B.
Ringnell, F. O.
Montrose—Kempff, H. W.
Morton—Goodyear, H. M.
Oak Park—Vanderslice, J. W.
Pana—Burgess, W.
Eberspaacher, F. J.
Peoria—Bacon, J. H.
Causey, F. A.
Levitin, E. Z.
Page—T. H.
Pinckneyville—Mead, D. O.
Ridgefarm—Dice, H. F.
Rockford—Green, J. A.
Moore, H. F.
Pearman, A.
Sullivan, H. A.
Rock Island—Comegys, J. P.
Mueller, A. N.
Sandwich—Dudley, E. F.
Springfield—Aschauer, A. G.
Deal, J. F.
Defreitas, J. A.
Herndon, R. F.
Sterling—Van Epps, H. E.
Tuscola—Ingram, G. R.

INDIANA

Anderson—Armington, J. C.
Ashley—Darnelle, T. E.
Aurora—Marshall, C. C.
Bicknell—Dees, H. E.
Bloomington—Kentling, J.
Carmel—Cooper, R. A.
Claypool—Landis, W. C.
Columbus—Graham, P. C.
Corydon—Sonne, I. J.
Crawfordsville—Schenck, F. O.
Cumberland—Young, J. B.
East Chicago—Golden, S. S.
Economy—Loops, A. L.
Elwood—Shewalter, G. M.
Gary—Schaible, E. L.
Gragville—Somers, L. E.
Greenwood—Good, D. R.
Hammond—Lloyd, A. W.
Melton, O. O.
Hartford City—Sellers, C. A.
Huntington—Dippell, E. T.
Indianapolis—Johnson, W. F.
Mervis, F. H.
Ohmart, W. A.
Shimp, H. A.
Strickland, C. R.
Walker, H. A.
LaFontaine—Fisher, M. F.
Lawrence—Ratliff, L. H.
Linton—Thomas A. A.
Logansport—Holt, E. K.
Manilla—Inlow, W. D.
Milton—Squier, W. C.
Mishawaka—Wyland, B. J.
Muncie—Bowles, H. S.
Muncie—Quick, J. M.
North Liberty—Sprague, J. S.
North Terre Haute—Shores, E. M.
Oakland City—Ashby, W. B.
Paoli—Lingle, S. L.
Peru—Wagner, M. L.
Princeton—Cushman, R. A.
South Bend—Rosenbury, C. S.
Knapp, A. L.
Tynor—Thompson, A. A.
Uniondale—Harris, B. W.
Valparaiso—Gowland, H. E.
Warren—Black, C. S.
Washington—Wadsworth, H. C.
West Baden—Boyd, C. E.
West Newton—McCaskey, G. H.
Williams—McFarlin, J. T.

IOWA

Akron—Leonard, E. R.
Atlanta—Burke, C. B.
Burlington—Schaefer, P. H.
Burt—Clapsaddle, J. G.
Centerville—James, C. S.
Carinda—Matthews, R. J.
Council Bluffs—Fonda, J. W.
Davenport—Cantwell, J. D.
Des Moines—Carey, L. O.
Dickens—Bruce, J. H.
Dubuque—Kearny, C. A.
Fort Dodge—Mulroney, C. H.
Schultze, A. A.
Fort Madison—Bess, T. F. E.
Granby—Ambrose, E. C.
Granges—Smith, C. G.
Greenville—Thrash, J. A.
Iowa City—Diven, W.
Morton, M. T.
Knoxville—Wright, J. R.
LaFayette—Clark, L. O.
Lewis—Murphy, W. W.
Logan—Kennedy, C. S.
Milton—Howe, L. C.
Muscatine—Johnston, W. H.
Pilot Mound—Shane, R. S.
Rolfe—Hollis, E. L.
Sioux City—Jepson, W.
Koch, G. W.
White, W. M.
Waterloo—Jaynes, E. T.

KANSAS

Burlingame—Naylor, N. E.
Crestline—Iliff, W. H.
Englewood—Pierce, L. J.
Garden City—Edwards, J. B.
Great Bend—Nixon, W. A.
Greenfield—Gibbs, C. M.
Kansas City—Gates, W. J.
Kinley, C. E.
Lewis, L. C.
Quinter—Rinehart, J. H.
Seneca—Snyder, H. G.
Shawnee—Thomas, B. D.
Stafford—Butler, W. L.
Topeka—Stewart, R. B.
Valley Falls—Marks, J. M.
White Cloud—Austin, F. J.
Wichita—Crittenden, A. L.
Schlegel, E. H.
Winfield—Cave, F. C.

KENTUCKY

Blaine—Osborn, H. C.
Bowling Green—Donnelly, A. D.
Covington—Noble, W. A.
Cynthiana—Wyles, J. P.
Ekron—Stith, S. H.
Fort Thomas—Hohnstedt, J. H.
Lacenter—Martin, J. W.
Lexington—Mitchell, E. W.
Louisville—Pottinger, S. L.
Paducah—Washburn, B. A.
Philpot—Kirk, I. A.
Richmond—Williams, D. J.

LOUISIANA

Derry—Hankins, W. N.
Lake Charles—Iles, D. C.
Merryville—Frazar, F. R.
New Orleans—Blackshear, S. M.
Bordenave, C. J.
Ruston—White, S. L.

MAINE

Augusta—Mann, L. L.
McKay, R. L.
Bangor—O'Brien, C. R.
Boothbay Harbor—Barrows, H. C.
Norway—Trufant, L. H.

MARYLAND

Baltimore—Gaddess, H. W.
Huck, J. G.

MASSACHUSETTS

Beverly—Voss, J. W.
Boston—Brearton, E. J.
Darling, C. B.
Paul, B. D.
Simmons, N. E.
Spaulding, J. D.
Tobey, G. L., Jr.
Vamvas, A. D.
Vose, R. H.
Brookline—Townsend, D.
Chelsea—Gilbert, M. A.
Marnoy, S. L.
Cliftondale—Harris, L. W.
Fairhaven—Thompson, C. E. P.
Fall River—Lebouef, J. S.
Foxboro—Bunnell, G. L.
Holbrook—Crawford, F. W.
Holyoke—Hussey, E. J.
Knowlton, E. A.
Lowell—Alling, M. L.
Atkinson, F. C.
Tabor, E. O.
Norwood—Kaufman, M. F.
Somerville—Pillsbury, E. D.
Springfield—Gilchrist, J. M.
Holden, N.
Merritt, R. E.
Schillmander, C. A.
Wellesley—Anthony, G. C. H.
Coleman, D. B.
Stanwood, F. A.
Wiswall, E. H.
West Somerville—Ruston, W. D.
Weymouth—Libby, J. H.
Winchester—Maynard, H. E.
Worcester—Albee, G. M.
Hill, G. H.

MICHIGAN

Ann Arbor—Brownell, M. E.
Darnall, J. R.
Cadillac—Oden, R. J. E.
Columbiaville—Chapin, C. D.
Detroit—Mayhew, D. P.
McAlpin, A. D.
Ormond, J. K.
Rosen, R.
Schaller, G. J.
Stephenson, F. T. F.
Harbor Springs—Miller, R. R.
Muskegon—Morford, F. N.
Grand Rapids—Peppler, J. F.
Urquhart, R. T.
St. Johns—Buck, R. C.

MINNESOTA

Altura—McGuire, C. J.
Atwater—Anderson, L. W.
Blue Earth—Chambers, W. C.
Brainard—Nelson, D. E.
Buhl—Johnson, S. M.
Chatfield—Woodruff, C. W.
Crockston—Daniels, W. H.
Deer Creek—Roskilly, G. C. P.
Ely—Ayres, G. T.
Grand Rapids—Hursh, M. M.
Mankato—Denman, A. V.
Minneapolis—Lynch, M. J.
Mann, A. T.
Nelson, O. E.
Moorhead—Briggs, F. W.
Owatonna—Andrist, J. W.
Pine City—Tofte, A. A.
Red Wing—Smith, M. W.
Spring Valley—Johnson, C. H.
St. Paul—Ball, C. R.
Welch, M. C.
Colvin, A. R.
Maloney, T. J.
Turnacliff, D. D.
Waseca—Rudolf, A. J.

MISSISSIPPI

Abey Como—Hooper, E. L.
Arm—Armstrong, M. C.
Brookhaven—Arrington, O. N.
Crystal Springs—Gibson, I. S.
Greenville—Montgomery, D. C.
Hattiesburg—Champenois, F.
Jackson—Plunkett, B. J.
Lambert—Crothers, V. M.
Leland—Gauden, H. D.
Meridian—Bailey, J. T.
Bourdeaux, T. D.
Houston, T. J.
Salem—Rudd, W. E.

MISSOURI

Ashley—Hereford, R. G.
Barry—Alton, G. P.
Bevier—Gronoway, T. P.
Blackwater—Abney, W. L
Buffalo—Hudson, F. A.
Bunker—Simmons, C. C.
Carterville—O'Kelley, F. M.
Clinton—Beaty, J. G.
Flat River—Cecil, G. E.
Fulton—McCubbin, J. B.
Grand Pass—Coon, E. H.
Hannibal—O'Keefe, C. D.
Hopkins—Maxwell, H. S.
Independence—Twyman, G. T.
Joplin—Chenoweth, J. A.
Kansas City—Cantrell, C. D.
Counsell, C. M.
Lichtenberg, J. S.
Owens, J. L.
Rhodes, C. C.
Roberts, J. L.
Ruhl, I. E.
Van Eman, F. T.
Wehr, C. W.
Weinberg, A.
King City—Blacklock, D. E.
Kirkwood—Werth, D. S.
Linn Creek—Moulder, J. D.
Nelson—Thompson, J. E.
Oakridge—Statler, W. K.
Odessa—Moennighoff, F. J.
Orrick—Kirkham, A.
Rayville—Gaines, G. W.
Sedalia—Ferguson, W. J.
Springfield—Bradley, E. H.
James, E. F.
St. Joseph—Timerman, A. R.
St. Louis—Altheide, C. H.
Esselbruegge, F. C.
Gorin, M. G.
Hale, T. H.
Haynes, F. W.
Jacobi, F. E.
Kring, E. V.
Lund, H. G.
Missimore, L. E.
Pfeffer, F. J.
Rassieur, L.
Schuck, A.

St. Louis—Thompson, A. M.
Upshaw, O. T.
Whitaker, G. W.
Wiesner, B. J.
Wobus, R. E.
Sturgeon—McComas, A. R.
Tarkio—Benham, C. E.

MONTANA

Big Timber—Claiborn, D. R.
Crow Agency—Townsend, B. I.
Dillon—MacMilla, H. A.
Roundup—Welsh, T. W.
Sheridan—Sutherland, E. L.
Stevensville—Fales, L. H.
Washu—Beltzer, C. E.

NEBRASKA

Aurora—Haughey, I. W.
Belgrade—Delany, L. A.
Carleton—Westergoff, J. G. W.
Fairmount—Ashby, A. A.
Fremont—Buchanan, A. E.
Rathbun, G. H.
Haigler—Doods, R.
Hastings—Calbreath, C. B.
Hamil, E. B.
Omaha—Barnes, E. M.
Haney, W. P.
Keugle, F. H.
Porter, E. R.
Rising City—Vanderhoff, T. J.
Swanton—White, H. E.
Upland—Devers, W. I.

NEVADA

Tonopah—Cunningham, J. R.

NEW HAMPSHIRE

Concord—Wallace, L. O. S.
Dover—Bennett, R. J.
Franconia—Johnson, H. L.
Nashua—Daudelin, A.
Rochester—Morin, J. J.

NEW JERSEY

Bogota—McFeely, P. R.
Boonton—Hance, B. M.
East Orange—Neare, C. R.
Hoboken—Arlitz, W. J.
Irvington—Farden, J. L.
Jersey City—Stockfisch, R. H.
Sulouff, S. H.
Newark—Harden, A. S.
Markens, E. W.
Preston, P. B.
Quinby, W. O'G.
Sutphen, C. E.
Tansey, W. A. A.
Paterson—Atwood, E. A.
McDede, F. F.
Plainfield—Pratt, C. H.
Probasco, N. H.
Trenton—Williams, H. D.
Whippany—McCormack, W. G.

NEW MEXICO

Hurley—Kindall, C. E.
Roswell—Vonalmen, S. G.
Silver City—Davis, J. R.

NEW YORK

Albany—Williams, F. J.
Amsterdam—Thompson, J. B.
Attica—Stedman, E. B.
Barker—Laport, R. G.
Brooklyn—Beatty, G. W.
Briggs, R. T.
Eis, B. M.
Holly, I. M.
Howard, T.
Levine, M. R.
O'Connell, W. J.
Buffalo—Clarke, E. A. D.
O'Gorman, F. M.
Sharp, E. A.
Short, J. E.
Wright, T.
Collins—Hadly, R. V. N.
Deposit—Axtell, C. M.
Garden City, L. I.—Woodword, J. T.
Hackensack—MacDonald, H. G.
Long Island—Wheelock, W. E.
Middletown—Schmitz, W. A.
New York—Berry, C. N.
Bullen, B. C.
Bunzel, E. E.
Carr, F. C.
Carter, R. F.
Cartwright, H. T.
Grabenstein, J.
Graham, J. R.
Jones, R. M.
Kulkin, S.
Laverty, G. L.
Lubin, E. K.
Marvel, N. C.
McTague, W. F.
Moriarty, R. W.
Neergaard, A. E.
Nelson, F. L.
Ray, E. T.
Roof, S. W.
Shapiro, S.
New York—Siegler, S. L.
Slattery, G. N.
Stein, S.
Sullivan, E. S.
Weingart, A. J.
West, R.
Wurthmann, J. W.
New Rochelle—Combes, F. C., Jr.
Olean—Atkins, L. J.
Ossining—Brieant, C. L.
Otto—Campbell, H. S.
Ravena—Post, R. B.
Rochester—Atwater, D. H.
Bullen, S. S.
Sayres, C. O.
Sperry, H. E.
Schenectady—Reynolds, H. S.
Sparkill—Knipe, J. B.
Syracuse—Goldstein, A. T.
Pritchard, H. B.
Troy—Stalter, G. R.
Wayne—Wright, A. F.
Willard—Priestman, G.
Yonkers—Paterson, D. C.

NORTH CAROLINA

Asheville—Williams, J. R.
Canton—Russell, J. M.
Clemmons—Hege, J. R.
Goldsboro—Stresnider, C. F.
Marietta—Hayes, A. H.
Rockwell—Earnhardt, J. M.
Warrenton—Rodgers, W. D., Jr.

NORTH DAKOTA

Bismarck—Fisher, A. M.
Schipper, L. A.
Grand Forks—Fisher, L. F.

OHIO

Barnesville—McCartney, J. T.
Batavia—Griffith, M. S.
Bloomington—McDonald, E. H.
Cincinnati—Critchlow, M. M.
Cusher, L. M.
Dawe, C. W.
Faller, A.
Iglauer, S.
Jenkins, W. I.
Kramer, S. P.
Reed, R. W.
Schell, H. F.
Wilson, M. E.
Cleveland—Feil, A. H.
Savage, H. J.
Selman, J. J.
Columbus—Bay, W. F.
Meek, G. T.
Steinfeld, A. M.
Columbus Grove—Morris, F.
Dayton—Brower, A. B.
Chynoweth, W. R.
Courtright, L. T.
Gallipolis—Holzer, C. E.
Hamilton—Skinner, D. M.
Johnston—Burner, G. W.
Korwood—Tidball, C. W.
Lancaster—Caldwell, S. C.
Lima—Curtiss, E. J.
Yingling, E. C.
Linden Heights—Valentine, C. M.
Lisbon—Maxwell, H. S.
Marion—Sawyer, C. W.
Mount Vernon—Blair, H. W.
Toledo—Cary, W.
King, C. R.
Van Wert—Good, B. L.
Washington—Demuth, W. F.
West Cairo—Hauman, L. H.

OKLAHOMA

Albion—Wright, P. E.
Ada—King, R. F.
Blanchard—Shi, T. P.
Cheyenne—Wallace, G. H.
Clinton—McBurney, C. H.
Cordell—Bungardt, A. H.
El Paso—Catto, W. B.
Fairfax—Bagby, E. L.
Fairview—Anderson, J. V.
Fletcher—Ashley, J.
Guthrie—Lovelady, B.
Henryetta—Ballinger, I. W.
Hobart—Leverton, W. R.
Hominy—Mullins, I.
Hugo—Harris, G. E.
Humphreys—Lowe, J. T.
Jenks—Harris, B.
Ketchum—Prowell, J. W.
Kinta—Johnson, E.
Kiowa—Johnson, C. A.
McAlester—Kilpatrick, G. A.
Williams, C. O.
Millerton—Moseley, F.
Minco—Hune, R. S.
Muldrow—Breedlove, J. C.
Norman—Ellison, G.
Nowata—Allen, R. I.
Oklahoma City—Alford, J. M.
Davis, E. F.
Day, C. R.
Bradley, H. C.
Fields, C. H.
Pine, J. S.
Postelle, J. M.
White, A. W.
Paoli—Lain, E. H.
Parum—Farris, R. C.
Pauls Valley—Shannon, J. B.
Pawnee—Weller, R. E.
Pond Creek—Enos, L.
Purcell—McCurdy, T. C.
Quinlan—Eilers, P. G.
Quinton—Chambers, A. G. M.
Sallisaw—Jones, S. B.
Sand Springs—Calhoun, C. E.
Sapulpa—McAllister, J. S.
Wetzel, G. H.
Shattuck—Newman, O. C.
Rollo, J. W.
Stilwell—Walters, C. A.
Strong City—Russell, B. W.
Sulphur—Davis, P. R.
Supply—Westfall, G. A.
Tulsa—Green, R. R.
Wayne—Dawson, O. O.
Waynoka—Gregg, O. R.
Wirt—Davis, P. R.
Woodward—Davis, C. E.
Yale—Stuck, L. A.

OREGON

Cloverdale—Shearer, J. B.
Portland—Johnston, W.

PENNSYLVANIA

Allentown—Sharp, J. C.
Aspinwall—Ross, W. G.
Avoca—Druffner, L. C.
Bernville—Schloppich, C. E.
Chambersburg—Maclay, J. P.
Easton—Coleman, W. L.
Glenside—Bibighaus, J. R.
Hellam—Horn, J. W., Jr.
Hulmeville—Paxson, K. R.
Jeanette—Miller, W. W.
Watson, J. H.
Lancaster—Kinzer, H. C.
Lock No. 4—Sickman, A. S.
Mahanoy City—Hensyl, G. S.
Mapleton Depot—Campbell, M. D.
McKeesport—Steele, T. A.
Nanty Glo—Barr, J. W.
Philadelphia—Bennett, W. A.
Foltz, J. C.
Hartwell, J. H.
Johnson, W. C.
Kohn, L. W.
Malondy, J. A.
McMaster, P. D.
Ritzman, R. R.
Whiteway, H. M.
Pittsburgh—Brenneman, R. E.
Evans, T., Jr.
Glynn, W. H.
Kelsey, J. S., Jr.
Langley, C. C.
Mitchell, J. W.
Owens, J. R.
Patterson, H. B.
Stover, M. E.
Reading—Wenner, A. K.
Sayre—McNamara, J. J.
Scranton—Reese, W. S.
Shamokin—Malone, C. M.
Sharpsburg—Stanton, C. C.
Steelton—Gallagher, J. L.
St. Mary's—Black, W. M.
St. Peters—Smith, H. T.
St. Petersburg—Wood, A. J.
Sweet Valley—Rummage, C. L.
Sunbury—Cooper, E. B.
Telford—Paulus, C. A.
Warren—Schuler, F. G.
Washington—McMurray, J. B.
Perry, E. H.
West Philadelphia — Humphreys, F. R.
Whiteley—Core, A. R.
Wilkes Barre—Fox, C. C.
Wivell, R. F.
Wyomissing—Lerch, C. E.

RHODE ISLAND

Providence—Hawkes, C. E.

SOUTH CAROLINA

Chester—Abell, R. E.
Malone, H. B.
Greenville—Brown, A. S.
Lancaster—Brown, R. C.
Poovey, G. W.
Rock Hill—Bigger, D. A.
Spartanburg—Wilson, G. D.
Starr—Land, J. N.
St. George—Behling, A. S.
Sumter—Littlejohn, T. R.
Weinberg, M.
Union—McElroy, A. P.

SOUTH DAKOTA

Aberdeen—Devereaux, T. J.
Whiteside, J. D.
Canton—Parke, L. L.
Frankfort—Gueffroy, H. A.
Kimball—Stewart, F. H.
Mitchell—Bobb, B. A.
Redfield—Chicester, J. G.
Sioux Falls—Keller, W. F.
Perkins, E. L.
Putnam, F. I.
Vandemark, G. E.
Veblen—Senescoll, C. R.
Wessington—McKie, J. F.
Yorkton—Morchause, E. M.

TENNESSEE

Alcoa—Bishop, W. A.
Campbellsville—Hulme, F. B.
Chattanooga—Ellis, G. M.
Williams, D. N.
Gleason—Jeter, J. E.
Hampton—Shoun, J. B.
Jasper—Price, J. A.
Nashville—Haiman, J. A.
Pikesville—Greer, D. A.
Riceville—Cannon, M. E.
Sparta—Richards, A. F.
Tate—Idol, J. H.
Watanga—Wallace, J. W.

TEXAS

Alda—Carroll, J. D.
Amarillo—Askew, W. L.
Ashutar—Bradbrook, J. A.
Belton—Denman, J. A.
Canadian—Synder, E. H.
Croshyton—Cagle, T. J.
Dallas—Watson, J. T.
Dipan—Axtell, E. C.
Elmendorf—Smith, R. K.
El Paso—Grace, T. W.
Fort Worth—Durringer, W. C.
Kingsbury, H. B.
Terrell, T. C.
Fulshear—Harris, R. D.
Harlington—Hutter, C. G.
Houston—Dawes, R.
Howard, A. P.
Kyle, J. A.
Morris, R. T.
Parker, G. D.
Scott, J. W.
Stokes, M. B.
Lampasas—Landrum, M. M.
LaPorte—Griffith, C. W.
Pecos—Camp, J.
Port Arthur—Autrey, A. R.
Rockdale—Sessions, I. P.
Rosenberg—Balke, J. W.
San Antonio—Johnston, L. S.
Sykes, E. M.
Taylor, C. W.
Shalowater—Bounds, R. W.
Strawn—Pedigo, W. S.
Texarkana—Smith, J. K.
Thorndale—Lawrence, E. L.
Village Mills—Anderson, W. W.
Waxahachie—Tenery, W. C.

UTAH

Heber—Dannenberg, B. A.
Salt Lake City—Irvine, A. R.
Pace, G. H.
Pugh, W.

VERMONT

Barre—Stewart, J. W.
Burlington—Perkins, C. N.
Gate City—Corns, E. M.
Rutland—Crahan, H. L.
Waitefield—Howard W. J.
Woodstock—Kidder C. W.

VIRGINIA

Norfolk—Horton A. G.
Northfield—Hurley, W. H.
Temperanceville—Nevitte, R. R.

WASHINGTON

Burlington—Jackson, W. L.
Grand Ronde—Schmidt, R. E.
LaConner—Greason, C. E.
Peel—Steel, W. E.
Seattle—Beckett, E. E.
Booth, J. R.
Mattice, A. T.
Wilson, C. E.
Tacoma—Steagall, J. R.
Walla Walla—Montgomery, C. E.

WEST VIRGIINIA

Charleston—Young, H. H.
Clarksburg—Patne, J. B.
Fairmont—Causey, H. D.
Follansbee—Crawford, W. S.
Huntington—Heald, W. W.
Shafer, E. E.
Whittaker, A. H.
Yost, G.
Kenova—Goff, T. N.
Parkersburg—Griffith, O. H.
Harris, T. L.
Philippi—Williams, C. B.
Sullivan—Koiner, W. W.
Sweet Springs—Traynham, B. L.
Worthington—Hildreth, B. H.

WISCONSIN

Ashland—Rohow, F. M.
Beloit—Maurer, H. C.
Columbus—Klein, J. T.
Cudahy—Thompson, E. X.
Delafield—Pleyte, A. A.
Eastman—Myrick, A. L.
Kenosha—Robinson, H. A.
Madison—Hodges, P. C.
Taylor, F. B.

Menomonee Falls—Campbell, W. B.
Milwaukee—Durner, U. J.
Roby, H. S.
Warfield, L. M.
Mount Calvary—Beasen, J. M.
Mount Horeb—Ishmael, O. E.
Nazianz—Minahan, J. J.
Oshkosh—Brockway, F.
Rice Lake—White, A. S.
Rome—Parker, T. G.

WYOMING

Buffalo—Conyers, C. A.
Hynds, J.
Powell—Lewellen, J. D.
Sheridan—Steffen, W. A.

COMMISSIONS ACCEPTED, U. S. NAVAL RESERVE FORCE

Previous lists published in The Journal, June 29, July 13 and 20.

CALIFORNIA

Long Beach—Sweet, F. D.
Los Angeles—Janes, E.
McDonald, T. G.
Pierce, S. N.
Oakland—Schutz, M. H.
Palo Alto—Williams, T. M.
San Francisco—Visalli, J.
Winnard, W.

CONNECTICUT

Bridgeport—Smith, E. S.
New Haven—Wright, L. H.
South Norwalk—West, H. B.
Stamford—Wood, C. L.

DELAWARE

Dover—McDaniel, J. S.

DISTRICT OF COLUMBIA

Washington—Ruiz, R. C.

FLORIDA

Jacksonville—Simpson, J. K.

GEORGIA

Atlanta—Vaughan, H. J.
Whelchel, G. O.
Douglas—Wilson, J. F.

ILLINOIS

Bowen—Judy, J. A.
Chicago—Hedgecock, A. J.
Welch, P. B.

INDIANA

Algiers—Whitehead, J. M.
Crawfordsville—Munsell, W. W.
Indianapolis—Hughes, H.
Kuebler, L. W.
Markleville—Williams, F. M.
Pendelton—Smith, C. E.

IOWA

Carbon—Wild, W. W.
LeCompte—Freeman, O. L.

MARYLAND

Baltimore—Warner, C. L.
Silver Springs — Montgomery, H. H.

MASSACHUSETTS

Boston—Sise, L. F.
Brookline—Wilcox, J. M.
Lawrence—McCarthy, J. A.
New Bedford—Taber, T. H.
Weston—Van Nuys, F.

MICHIGAN

Benton Harbor—Ryno, C. M.
Detroit—Van Volkenburgh, V. A.
Grand Rapids—Corey, P. V.
Whalen, J. M.

MINNESOTA

Euclid—Stuhr, J. W.
Lake Park—Snell, A. M.
Minneapolis—Swenden, C. G.
New Richland—Sybirud, H. W.
Owatonna—Smersh, J. F.
St. Paul—Schier, A. R.

MISSOURI

Kansas City—Skinner, J. O.
Walker, J. O.
Moberly—Simmons, R. R.
St. Joseph—Liberman, D. L.
St. Louis—Wilcox, B. H.

MONTANA

Helena—Worth, C.

NEBRASKA

Doniphan—Wagoner, L.

NEW HAMPSHIRE

Laconia—Watt, A. H.

NEW JERSEY

Gloucester—Geissler, E. E.
Newark—Taylor, E. C.
Trenton—Williams, G. W.

NEW YORK

Hamden—Marsland, M. E.
Kingston—Vogt, G. C.
New York—Vail, J. B.
Vorhaus, M. G.
Whisman, H. S.
Rochester—Wehle, F. W. A.
West Chazy—Stiles, H. R.

NORTH CAROLINA

Charlotte—Guthrie, W. G.
Huntersville—Lackey, M. A.
Monroe—Stewart, H. D. L.

OHIO

Albany—Webb, C. C.
Athens—Goldsberry, B. R.
Ralston—Spaulding, H. B.

OREGON

Astoria—Van Dusen, A.
Portland—Smalley, R. B.
Strong, H. L.
Warner, D. H.
White, R. F.
Young, R. G.

PENNSYLVANIA

Condersport—Smith, J. H.
Halifax—Smith, F. C.
Philadelphia—Goldburgh, H. L.
Miller, H. M.
Sangmeister, H. J.
Talley, J. E.
Pittsburgh—Callmon, V. B.
Weber, J. J.

RHODE ISLAND

Providence—Matteson, G. A.
Porter, L. B.
Van Benschoten, G. W.
Westcott, C. S.
Wing, E. S.

SOUTH CAROLINA

Woodruff—Woodruff, P. E.

TENNESSEE

Knoxville—Young, F. L.

TEXAS

Cumby—Ward, E.

VIRGINIA

Charlottesville—Waddell, W. W.
Norfolk—Whitlock, S. B.

ORDERS TO OFFICERS OF THE MEDICAL CORPS AND OF THE MEDICAL CORPS OF THE NATIONAL ARMY

To Camp Beauregard, Alexandria, La., for duty, from Fort Sill, Major WILLIAM S. LAWRENCE.

To Camp Sheridan, Montgomery, Ala., for duty, from Fort Oglethorpe, Lieut. WILLIAM B. FOSTER, Jr.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Fort Riley, Major EDWARD A. COATES.

To Fort Leavenworth, Kans., for duty, Major WILFRED E. CHAMBERS.

To Fort Oglethorpe for duty, from Hoboken, Col. HENRY H. RUTHERFORD.

To Williamsbridge, N. Y.; Camp Merritt, N. J.; Fox Hills, N. Y., and *Hoboken, N. J.*, for conference, and on completion *to his proper station*, Lieut.-Col. ALLEN B. KAVANAL.

The following order has been revoked: *To Camp Cody*, Deming, N. M., as assistant to camp surgeon, Major ROBERT E PARRISH.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Camp Jackson, Columbia, S. C., base hospital, Capt. BERTRAM E. MARSHALL, Mt. Vernon.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from New York City, Lieut. EUGENE THAMES, Mobile.

To Camp Wadsworth, Spartansburg, S. C., base hospital, Capt. WILLIAM L. THORNTON, Birmingham.

To Fort Ogelthorpe for instruction, Capts. CHARLES W. HILLIARD, Dothan; MARION T. GAIENS, Mobile; Lieuts. MAURICE H. COHN, Birmingham; THOMAS W. RHOADES, Shoals.

To New Haven, Conn., for duty, from Camp Colt, Lieut. ALBERT D. McFADDEN, Auton.

Arizona

To Camp Cody, Deming, N M, base hospital, Lieut. GEORGE F. MANNING, Flagstaff.

To Fort Riley, for instruction, Capt. JOHN LeR. WALES, Globe.

Arkansas

To Camp Beauregard, Alexandria, La., base hospital, Lieut. HARRY W. BROWNING, Little Rock.

To Fort Oglethorpe for instruction, Lieut. JACK S. STELL, Fordyce.

To Fort Riley for instruction, Capt. LOENCE J. KOSMINSKY, Texarkana.

California

To Berkeley, Calif., University of California, for duty, Capt. ROBERT T. LEGGE, Berkeley.

To Camp Beauregard, Alexandria, La., base hospital, Capt. THOMAS C. MYERS, Los Angeles.

To Camp Cody, Deming, N. M., base hospital, Lieut. JOHN M. CHAIN, Eureka.

To Fort Riley for instruction, Capts. RAPHAEL MOTHERAL, Hanford; CHARLES H. BENZINGER, Moneta; SAMUEL A. SWENSON, Oakland; Lieuts. IVAN W. KETTH, Beaumont; MYER J. WHARHAFTIG, Folsom; CHARLES W. HARRISON, Loma Linda; WEBSTER F. KELLER, Long Beach; WALTER F. KITTLE, CLARENCE MELLMAN, Los Angeles; CLARK D. FANTON, Riverside; GEORGE L. BARRY, San Jose.

To Mineola, L. I., N. Y., for duty, from San Antonio, Capt. FREDERICK A. BONTHIUS, Los Angeles.

To report by wire to the commanding general, Western Department, for assignment to duty, Major HARRY M. SHERMAN, San Francisco; Lieuts. ELMER E. MARTIN, Gridley; FITCH C. E. MATTISON, Pasadena; JOHN T. O'BRIEN, Petaluma; THOMAS E. HUNT, San Francisco.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. THOMAS L. ROGERS, Long Beach.

To San Francisco, Calif., for instruction, and on completion *to Camp Fremont*, Palo Alto, Calif., base hospital, Capts. GEORGE A. LAUBERSHEIMER, Los Angeles; HARRY F. MARKOLF, Pasadena; Lieuts. SANFORD W. CARTWRIGHT, Ceres. On completion *to Camp Kearney*, Linda Vista, Calif., base hospital, Capt. CHARLES D. R. GLEASON, San Francisco. On completion *to Camp Lewis*, American Lake, Wash., base hospital, Capts. CLARENCE W. COOK, ULYSSES C. MILLER, Los Angeles; ROBERT R. HAMMOND, Lieuts. LLEWELLYN R. JOHNSON, HARMON E. PRICE, Stockton. *To Letterman General Hospital*, for temporary duty, Lieut. DEWEY R. POWELL, Stockton.

Resignation of Lieut. WARREN W. STRANGE, Sacramento, accepted.

The following order has been revoked: *To Fort McPherson, Ga.*, Major HARRY T. SUMMERSGILL, San Francisco.

Canal Zone

To Fort Oglethorpe for instruction, Lieut. MORRIS JOSEPH, Santa Tomas, Panama.

To report to commanding general, Panama Canal Department, Lieut. LEVIN W. G. ORTON, Ancon.

Colorado

To Biltmore, N. C., for temporary duty, from Denver, Capt. SAMUEL F. JONES, Denver.

To Camp Crane, Allentown, Pa., for duty, from Camp Cody, Major CHARLES F. STOUGH, Colorado Springs.

To Camp Dodge, Des Moines, Iowa, as orthopedic surgeon, from Fort Riley, Lieut. WILLIAM H. HALLEY, Pueblo.

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Lieut. ELWYN R. CLARKE, Fort Morgan.

To Camp Sevier, Greenville, S. C., base hospital, Capt. CHARLES S. MORRISON, Colorado Springs.

To Fort Oglethorpe for instruction, Lieut. REUBEN SCHACHET, Denver.

To Fort Riley for instruction, Capt. JAMES M. BRADEN, Lafayette; Lieuts. WALTER J. LeROSSIGNOL, Rifle; BEN B. BESHOAR, Trinidad.

To Memphis, Tenn., Signal Corps Aviation School, for duty, from Mineola, Lieut. JOSEPH B. SALBERG, Boulder.

To Plattsburg Barracks, N. Y., for duty, from Camp Bowie, Major FRANCIS M. McNAUGHT, Denver.

To report by wire to the commanding general, Central Department, for assignment to duty Capt. JOHN A. DUNWOODY, Cripple Creek; Lieut. WILLIAM V. WATSON, Plateau City.

Connecticut

To Camp Devens, Ayer, Mass. for duty, from Camp Grant, Lieut. BURTON E. LOVESEY, New Haven.

To Camp Logan, Houston, Texas, for duty, from Camp Sevier, Capt. WILLIAM H. GRAY, Mystic.

To Fort Oglethorpe for instruction, Capts. BARTHOLOMEW F. DONOHUE, Forestville; JAMES F. ROONEY, Hartford; Lieuts. LEWIS G. BEARDSLEY, Bridgeport; JOSEPH M. HEFFERMAN, Danbury; ROBERT V. BOYCE, WILLIAM P. DALY, Hartford; WILLIAM M. JOYCE, Middletown; LUCIAN A. GERACI, New Haven; VOYLE A. PAUL, Stamford.

To Jefferson Barracks, Mo., with the board examining the troops for cardiovascular diseases, from Camp Beauregard, Lieut. FRED M. SMITH, Willimantic.

To report by wire to the commanding general, Northeastern Department, for assignment to duty, Lieut EDMUND J O'SHAUGHNESSY, New Canan.

To Vancouver Barracks, Wash., for duty, from New Haven, Capt. HAROLD S. ARNOLD, New Haven.

The following order has been revoked: *To New Haven, Conn.*, for duty, from Newport News, Lieut. SAMUEL H. BRAUDE, New Haven.

Delaware

To Fort Oglethorpe for instruction, Lieuts. ARTHUR K. LOTZ, SIGMUND B. PAWLIKOWSKI, Wilmington.

District of Columbia

To Camp A. A. Humphreys, Accotink, Va., for duty, from Fort Oglethorpe, Capt. CHAUNCEY L. BARBER, Washington.

To Camp Jackson, Columbia, S. C., base hospital, Lieut. SIMON R. KARPELES, Washington.

To Fort Oglethorpe for instruction, Capt. FRANK A. HORNADAY, Washington.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, Lieut. WILLIAM J. G. THOMAS, Washington.

Florida

To Camp Beauregard, Alexandria, La., for duty, from Fort Oglethorpe, Lieut. JOHN C. VINSON, Tampa.

To Fort Oglethorpe for instruction, Lieuts. LUTHER W. HOLLOWAY, Carrabella; BENJAMIN L. PADGETT, Hastings; ROBERT D. MAY, Jacksonville.

Georgia

To Camp Beauregard, Alexandria, La., base hospital, Capt. HERMAN W. HESSE, Savannah. For duty, from Fort Oglethorpe, Lieut. HOMER L. REDD, Atlanta.

To Camp Gordon, Atlanta, Ga., for duty, from Camp Meade, Capt. WALPOLE C. BREWER, Atlanta.

To Camp Hancock, Augusta, Ga., base hospital, from Fort Oglethorpe, Lieut. FRANCIS C. NESBIT, Waycross.

To Fort Oglethorpe for instruction, Capt. WILLIAM L. COOKE, Columbus; Lieuts. THOMAS B. ARMSTRONG, Atlanta; FRANK E. DAVES, Blue Ridge; WILLIAM G. WILLIAMS, Jr., Cochran; JAMES H. CARR, Tunnel Hill.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Upton, L. I., N. Y.*, base hospital, Lieut. JAMES R. McCORD, Atlanta. On completion *to his proper station*, from Camp Upton, Lieut. THOMAS B. KING, Sandersville.

Idaho

To Camp Lewis, American Lake, Wash., base hospital, Capt. WILLIAM S. TITUS, Boise.

To Fort Riley for instruction, Lieut. JOHN H. CROMWELL, Gooding.

Illinois

To Camp Devens, Ayer, Mass., for duty, from Camp Grant, Capt. ROBERT S. GREGG, Lieut. JOHN M. BERGER, Chicago.

To Camp Dodge, Des Moines, Iowa, base hospital, Lieut. DAVID O. MEADE, Pinkneyville.

To Camp Gordon, Atlanta, Ga., for duty, from Camp Hancock, Capt. GRANT J. GRAY, Chicago; from Fort Oglethorpe, Lieuts. VIRGIL D. GREER, CONSTANTINE J. KOURSOUMIS, JACOB MEYER, Chicago.

To Camp Grant, Rockford, Ill., base hospital, Lieuts. LAVERN C. BASSETT, Furina; GEORGE H. STACY, Jacksonville; CONRAD G. APPELLE, Thompson. For duty, from Fort Riley, Lieuts. INGEBRECT JERDEE, HARRY LEWIN, Chicago; from Walter Reed General Hospital, Lieut. EDWARD J. STRICKLER, Chicago.

To Camp Hancock, Augusta, Ga., base hospital, Capt. JAMES W. BARROW, Carbondale.

To Camp Logan, Houston, Texas, for duty, from Camp Greene, Lieut. JOHN J. WILKINSON, Springfield.

To Camp McClellan, Anniston, Ala., base hospital, Lieut. WILLIAM H. WEIRICH, Marseilles.

To Camp Sevier, Greenville, S. C., for duty, from Camp Beauregard, Major WILLIAM R. CUBBINS, Chicago.

To Camp Sheridan, Montgomery, Ala., as assistant to camp surgeon, from Fort Oglethorpe, Capt. JOHN E. WALTON, Medora.

To Camp Zachary Taylor, Louisville, Ky., base hospital, Capts. LOUIS L. FRISQUE, NORMAN KERR, Chicago. For duty, from Fort Oglethorpe, Capt. WALTER WALDEN, East Moline.

To Fort Des Moines, Iowa, base hospital, from Camp Zachary Taylor, Lieut. RALPH W. CARPENTER, Chicago.

To Fort McPherson, Ga., for duty, from Camp Grant, Major ASHLEY S. MORRILL, Chicago.

To Fort Oglethorpe, base hospital, Lieut. JOHN H. MOORE, Chicago. For duty, Capt. JOSEPH M. BLUM, Chicago. For instruction, Lieuts. HENRY J. McCOY, Amboy; SAMUEL AXELRAD, FRANK L. FORTELA, CLAUDE E. HALE, WILLIAM S. HOWARD, JAY G. JONES, HENRY F. MAY, JOHN T. O'CONNELL, Jr., CARL W. RASMUSSEN, STEPHEN A. SCHUSTER, GEORGE M. SEGAL, HENRY SHACOFF, CLARENCE E. SIDWELL, FREDERICK D. WALK, Chicago; SCOTT GOMIN, Colfax; WILLIAM V. CLARK, Curron; THOMAS C. McCLURE, Dahlgren; MYRON C. SHENK, Rushville; CHARLES HIBBE, Springfield; ROSCOE L. BARLOW, Walshville; from duty as a private, Lieut. HARRY O. POPE, Latham.

To Fort Sam Houston, Texas, for duty, from Camp Grant, Major EGBERT W. FELL, Elgin; from Camp Travis, Major PATRICINNE J. H. FARRELL, Chicago.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieuts. WALTER E. KELLY, GEORGE F. YATES, Chicago; RALPH B. SCOTT, Venice; RICHARD HERRICK, Wyanet.

To Washington, D. C., for duty in the Surgeon-General's Office, from Camp Wheeler, Capt. JAMES A. BRITTON, Chicago.

To West Point, Miss., Signal Corps Aviation Schcool, as flight surgeon, from Mineola, Capt. DAVID R. SCOTT, Macomb.

To Williamsbridge, N. Y., for duty, from Fort Oglethorpe, Capt. CHARLES R. SANDERSON, Blooming.

Honorably discharged, Major ARTHUR F. WILHELMY, Decatur. On account of physical disability existing prior to entrance into the service, Lieut. JAMES T. BREAKEY, Mason.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. PAUL M. HUNTER, Chicago.

Indiana

To Camp A. A. Humphreys, Accotink, Va., for duty, from Fort Oglethorpe, Capt. FLAVIUS J. BECK, Hartsville.

To Camp Custer, Battle Creek, Mich., base hospital, Lieut. CHARLES A. SELLERS, Hartford City.

To Camp Dodge, Des Moines, Iowa, base hospital, Capt. EMIL T. DIPPELL, Huntington.

To Camp Gordon, Atlanta, Ga., for duty, Lieut. G. H. PARMENTER, Stewartsvile; from Fort Oglethorpe, Lieut. ELI LEVIN, Indiana Harbor.

To Camp Greene, Charlotte, N. C., base hospital, Capt. HUGH J. WHITE, Hammond.

To Camp Hancock, Augusta, Ga., base hospital, Lieut. LUCIAN W. SMITH, Warren.

To Camp Sevier, Greenvile, S. C., base hospital, Capt. FRANK A. TABOR, Terre Haute; Lieut. EMIL G. WINTER, Indianapolis.

To Camp Shelby, Hattiesburg, Miss., base hospital, Lieut. CARL V. DAVISSON, West Lafayette.

To Camp Travis, Fort Sam Houston, Texas, as orthopedic surgeon, from Fort Oglethorpe, Lieut. JACOB ADER, Danville.

To Camp Wadsworth, Spartanburg, S. C., base hospital, Lieut. CHARLES H. BRUNER, Greenfield.

To Camp Wheeler, Macon, Ga., base hospital, Lieut. HARRY J. LAWS, Lafayette.

To Fort Benjamin Harrison for duty, Lieut. THOMAS L. SULLIVAN, Indianapolis.

To Fort McPherson, Ga., for temporary duty, Capt. HEILMAN C. WADSWORTH, Washington.

To Fort Oglethorpe for instruction, Capts. STEPHEN L. EGART, Indianapolis; ALLEN L. BRAMKAMP, Richmond; Lieuts. THEODORE S. SCHILT, Bremen; FRANCIS H. FOX, Hammond; ROY L. SMITH, Indianapolis; SOLOMON G. SMELZER, Richmond; GEORGE W. SMALL, Veedersburg; ARTHUR J. BAUER, Lafayette.

Iowa

To Camp Beauregard, Alexandria, La., for duty, from Fort Oglethorpe, Lieut. ARTHUR J. ROSS, Perry.

To Camp Bowie, Fort Worth, Texas, base hospital, from duty as a private, Lieut. HARRY H. DILLEY, Des Moines.

To Camp Cody, Deming, N. M., base hospital, Capt. EDWARD L. ROHLF, Waterloo.

To Camp Custer, Battle Creek, Mich., base hospital, Lieut. CHARLES H. MULRONEY, Camp Dodge.

To Camp Devens, Ayer, Mass., for duty, from Camp Custer, Capt. EDWARD S. PARKER, Ida Grove.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. ISAAC H. ODELL, Des Moines.

To Camp Grant, Rockford, Ill., base hospital, Capt. ISAAC E. NERVIG, Sioux City. For duty, from Fort Riley, Lieut. JOHN T. HANNA, Kellogg.

To Camp Zachary Taylor, Louisville, Ky., base hospital, Lieut. JAMES S. COOPER, Burlington; ALBERT E. ACHER, Fort Dodge.

To Fort McPherson, Ga., for duty, from Camp Cody, Lieut. GUS. B. YOUNG, Des Moines; from Camp Dodge, Lieut. JAMES A. PORTER, Hedrick; from Camp Greene, Lieut. ARTHUR E. SHAPPELL, Knoxville; from Camp Lewis, Capt. CARL J. SNITKAY, Belle Plaine.

To Fort Riley for instruction, Capts. ROY MOON, Glenwood; JOHN E. BRINKMAN, Waterloo; Lieuts. EDWIN C. YODER, Iowa City; HOWARD L. SIEG, Marshalltown; ROYDON B. YODER, Northwood; MALCOLM D. WINTER, Truro; WELLWOOD M. NESBIT, Waterloo; PAUL G. INGHAM, Whiting.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieut. EDWARD A. COUPER, Britt.

To Morrison, Va., for duty, from Fort Oglethorpe, Lieut. GEORGE A. BEMIS, Garner.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. SIDNEY J. JONES, Fort Dodge.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. WALTER G. FINLEY, Mondamin.

Kansas

To Camp Cody, Deming, N. M., as assistant to camp surgeon, from Fort Riley, Lieut. ALVAN M. FORTNEY, De Soto. Base hospital, Capt. WILLIAM A. NIXON, Great Bend.

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Lieuts. WALTER C. KELLER, Athol; CARL C. CULVER, Burlington; GORDON W. HIGGINBOTHAM, Wichita.

To Fort Oglethorpe for instruction, Capt. JOHN W. FAUST, Kansas City.

To Fort Riley for instruction, Capt. HARRY L. COBEAN, Wellington; Lieuts. ROY M. EDMISTON, Americus; EVERETT W. JOHNSON, Coffeyville; JOHN E. CASTLES, Lawrence; RAYMOND W. SWINNEY, Rosedale; ARTHUR H. HAYNES, Sabetha; JOHN W. NEPTUNE, Salina.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieut. WILLIAM H. GREIDER, Topeka.

Kentucky

To Camp A. A. Humphreys, Accotink, Va., for duty, from Fort Oglethorpe, Capt. EDWARD C. BARLOW, Georgetown.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Capt. JAMES B. SMITH, McKinney.

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Lieut. CLIVE A. MOSS, Williamsburg.

To Fort Leavenworth, Kan., for duty, Lieuts. WALLER C. COMBS, Kirksville; GROVER S. BRZOZOWSKY, Louisville.

To Fort Oglethorpe for instruction, Lieuts. GEORGE W. BOOHER, Berry; WALTER F. McCROCKLIN, Louisville.

To Fort Riley for instruction, Capt. JOSEPH M. O'MALLEY, Covington.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieuts. CLARENCE WOODBURN, Central City; WILLIAM A. McKENNEY, Falmouth; JOHN M. ALEXANDER, Fulton; JAMES McC. HUBBARD, Hickman; THOMAS L. PHILLIPS, Kuttawa.

Louisiana

To Camp Beauregard, Alexandria, La., base hospital, Capts. MAURICE J. COURET, WILLIAM W. LEAKE, New Orleans; Lieuts. AMABLE A. COMEAUX, Gueydan; WILLIAM T. PATTON, PAUL T. TALBO, New Orleans. For duty, from Fort Oglethorpe, Lieut. JOHN C. CHAPMAN, Colfax.

To Camp Lee, Petersburg, Va., for duty, from Camp Dix, Major JAMES B. GUTHRIE, New Orleans.

To Camp Sheridan, Montgomery, Ala., for duty, from Fort Oglethorpe, Lieut. ALLEN B. WHEELIS, Marion.

To Fort Jay, N. Y., for duty, from Fort Riley, Lieut. WILLIAM E. BALSINGER, New Orleans.

To Fort Oglethorpe for instruction, Lieut. WILLIAM L. BENDEL, Lake Charles; EDGAR J. BERANGER, New Orleans; WILLIAM E. BARKER, Placquemine.

To Fort Sam Houston, Texas, for duty, from Camp Travis, Major EDMUND MOSS, New Orleans.

Maine

To Fort Ethan Allen, Vt., for duty, Lieut. HARLAN R. WHITNEY, Windham.

To Fort Oglethorpe for instruction, Capt. JOHN C. HAM, Belfast; HERBERT M. HOWES, Topham; LORENZO W. HADLEY, Union. To give orthopedic instruction, and on completion to Fort Riley, from Fort Riley, Major WILLIAM C. PETERS, Bangor.

Maryland

To Army Medical School for instruction, Lieut. SIDNEY O. REESE, Ja., Baltimore.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. BENJAMIN M. JAFFE, Baltimore.

To Camp Meade, Admiral, Md., as assistant to camp surgeon, from Camp Wheeler, Lieut. EDWARD B. BEASLEY, Baltimore. Base hospital, Lieut. COEN L. LUCKETT, Baltimore.

To Camp Shelby, Hattiesburg, Miss., for duty, from New Haven, Lieut. SAMUEL SNYDER, Maryland State Tuberculosis Sanitarium.

To Fort McPherson, Ga., for duty, Capt. JAMES M. H. ROWLAND, Baltimore; from Camp Wadsworth, Lieut. HOWARD H. JOHNSTON, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. IPOLITAS B. BRONUSHAS, HARRY R. CARROLL, CHARLES C. CHILDS, ARTHUR D. MORAN, Baltimore.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to his proper station,* from Camp Meade, Capt. THOMAS R. PAYNE, Corbett.

Massachusetts

To Army Medical School for instruction, Lieut. HENRY T. COMPTON, Cuttyhunk.

To Camp Abraham Eustis, Lee Hall, Va., for duty, from Fort Oglethorpe, Lieut. FRANK F. SANDLER, Revere.

To Camp Upton, L. I., N. Y., base hospital, Capts. JOHN W. VOSS, Beverly; WILLIAM H. ALLEN Mansfield.

To Camp Wadsworth, Spartanburg, S. C., with the board examining the command for nervous and mental diseases, Capt. MICHAEL M. JORDAN, Westboro.

To Camp Wheeler, Macon, Ga., base hospital, from Fort Oglethorpe, Lieut. JAMES H. COOK, Quincy.

To Camp Zachary Taylor, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. CARL A. DAHLEN, Boston.

To Fort Oglethorpe for instruction, Capts. ALBERT A. McCAULEY, Brighton; HOWARD W. JEWETT, Lowell; Lieuts. WILLIAM A. BISHOP, Abington; ARTHUR F. SARGENT, Boston; LOUIS J. GRANDISON, Charlestown; MANFRED E. SIMMONS, Dedham; JOSEPH P. KEARNEY, Lowell; IRVING F. ARMSTRONG, Marlboro; SIDNEY J. SOLOMON, Revere; FREDERICK A. MEAD, Williamsett.

To Fort Worth, Tex., Barton Field, Signal Corps Aviation School, for duty, from Mineola, Lieut. EMMETT E. LIGHT, Springfield.

To New Haven, Conn., for duty, Lieut. CECIL W. CLARK, Newtonville.

To report by wire to the commanding general, Northeastern Department, for assignment to duty, Lieut. WALTER F. ROBIE, Baldwinsville.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Greene,* Charlotte, N. C., base hospital, Capt. EDWARD P. RICHARDSON, Boston.

To Walter Reed General Hospital, Takoma Park, D. C., for temporary duty, and on completion *to his proper station,* from Fort McHenry, Capt. FRANK A. DAVIS, Boston.

Michigan

To Camp A. A. Humphreys, Accotink, Va., as camp surgeon, from Fort Oglethorpe, Capts. SAMUEL C. CROW, Detroit; CHAUNCEY L. BARBER, Lansing.

To Camp Cody, Deming, N. M., as assistant to camp surgeon, from Fort Riley, Lieut. FORREST R. OSTRANDER, Lansing.

To Camp Devens, Ayer, Mass., as orthopedic surgeon, from Boston, Lieut. HARTHER L. KEIM, Ann Arbor. For duty, from Camp Grant, Lieut. EMIL V. MAYER, Detroit.

To Camp Dodge, Des Moines, Ia., base hospital, Major BURTON R. CORBUS, Grand Rapids.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. LYLE O. SHAW, Detroit.

To Camp Meigs, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. ALONZO B. PERSLEY, Detroit.

To Camp Zachary Taylor, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. MAURICE C. LOREE, Ann Arbor.

To Fort Oglethorpe for instruction, Major NEIL S. MACDONALD, Houghton; Capt. VERNON J. HOOPER, Detroit; JAMES HOUSTON, Swartz Creek; Lieuts. LAWRENCE H. VAN BOCELAERE, DELOS S. BULFORD, STEPHEN G. MOLLICA, WILLIAM D. RYAN, Detroit; JOHN T. BURNS, Kalamazoo; GEORGE J. CURRY, Watersweet.

To New York City, Neuro-Surgical School, for inspection, and on completion *to his proper station,* Capt. GROVER C. PENBERTHY, Detroit.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieuts. GEORGE H. THOMAS, Holland; HOWARD I. POST, Ypsilanti.

To the inactive list, from Hoboken, Major UDO J. WILE, Ann Arbor.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. EDWARD P. WAID, Salem.

Minnesota

To Camp Custer, Battle Creek, Mich., base hospital, Capt. ANDREW F. MOYNIHAN, Sauk Centre; Lieut. DAVID E. NELSON, Brainerd.

To Camp Dodge, Des Moines, Ia., base hospital, Lieut. CHARLES J. McGUIRE, Altura; ANDREW GULLIXSON, Bricelyn.

To Camp Grant, Rockford, Ill., base hospital, Capt. MICHAEL C. WELCH, St. Paul.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. JOHN R. WOOD, Hallock.

To Camp Sherman, Chillicothe, Ohio, base hospital, Lieut. HUGO J. A. J. HARTIG, Minneapolis.

To Camp Zachary Taylor, Louisville, Ky., base hospital, Capts. MATTHEW J. LYNCH, Minneapolis; JAMES W. ANDRIST, Owatonna.

To Fort McPherson, Ga., for duty, from Camp Dodge, Capt. HERBERT A. MORRISS, Minneapolis.

To Fort Oglethorpe for instruction, Capt. CHARLES P. ROBBINS, Winona; Lieut. ROBERT S. FORBES, West Duluth.

To Fort Riley for instruction, Capts. EDGAR R. BARTON, Frazee; GEORGE F. LEMKE, St. Paul; ALBERT A. TOFTE, Pine City.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School,* for duty, from Fort Riley, Lieut. WILLIAM J. EKLUND, Duluth.

To Vancouver Barracks, Wash., for duty, from New Haven, Lieut. LEE W. POLLOCK, Rochester.

Resignation of DONALD L. LANEY, Brown Valley, accepted.

Mississippi

To Camp Beauregard, Alexandria, La., for duty, from Fort Oglethorpe, Lieut. SILAS W. PEARSON, Louisville.

To Camp Grant, Rockford, Ill., for duty, from Camp Greene, Lieut. JULIUS M. REYNOLDS, Shabuta.

To Camp Hancock, Augusta, Ga., base hospital, Capt. GEORGE W. REMBERT, Jackson.

To Camp John Wise, San Antonio, Tex., for duty, from Fort Oglethorpe, Capt. JOHN R. KITTRELL, Laurel.

To Camp Sevier, Greenville, S. C., for duty, from Camp Beauregard, Capt. JAMES S. REID, Lamkin.

To Camp Upton, L. I., N. Y., base hospital, from Camp Abraham Eustis, Lieut. WIRT A. RODGERS, Jackson.

To Fort Oglethorpe for instruction, Capts. JOHN C. McNAIR, Fayette; GEORGE G. ASH, Lexington; Lieuts. SAMUEL F. NEAL, Marks; ARTHUR F. KYGER, Pinola; MONTIEZUMA PORTER, Water Valley.

Missouri

To Camp Beauregard, Alexandria, La., as assistant to camp surgeon, from Fort Riley, Lieut. LANSFORD M. SPALDING, Olean. Base hospital, Lieuts. JAMES M. BLACK, WILLIAM H. CLITHERO, St. Louis.

To Camp Bowie, Fort Worth, Tex., base hospital, Lieut. ANDREW H. CLEVELAND, St. Louis.

To Camp Cody, Deming, N. M., base hospital, Capt. LOUIS RASSIEUR, St. Louis.

To Camp Devens, Ayer, Mass., base hospital, from Camp Pike, Lieut. LAWRENCE D. INLOE, Jefferson City.

To Camp Dodge, Des Moines, Ia., base hospital, Capt. WILLIAM T. HIRSCHI, St. Louis.

To Camp Grant, Rockford, Ill., for duty, from Camp Greene, Lieut. CECIL S. CAMPBELL, St. Louis; from Fort Riley, Capt. WILLIAM A. POTTER, Lancaster.

To Camp Sevier, Greenville, S. C., base hospital, from Camp Beauregard, Lieut. VINCENT F. TOWNSEND, St. Louis.

To Camp Sherman, Chillicothe, Ohio, as orthopedic surgeon, from Camp Custer, Lieut. LEON V. URBANOWSKI, St. Louis.

To Fort Des Moines, Ia., base hospital, from Camp Cody, Lieut. JOHN L. TIERNEY, St. Louis.

To Fort McPherson, Ga., for duty, from Camp Beauregard, Lieut. RALPH L. COOK, St. Louis; from Camp Gordon, Lieut. HERBERT H. PRICE, St. Louis; from Fort Oglethorpe, Lieut. OMAR R. SEVIN, St. Louis.

To Fort Oglethorpe for instruction, Major MEYER WIENER, St. Louis; Capts. MAX W. MYER, Columbia; JAMES M. RUSSELL, Monett; REINHARD E. WOBUS, St. Louis; Lieut. ALFRED L. SAWYER, Fort Fairchild. For temporary duty, from Colonia, Capt. RALPH F. NIEDRINGHAUS, St. Louis.

To Fort Riley for instruction, Capts. FRED L. OGILVIE, Blodgett; ELISHA H. G. WILSON, Cape Girardeau; HUGH S. ROWLETT, Marysville; OTTO B. ILCH, St. Charles; Lieuts. LAWRENCE L. SMITH, Bethel; OSCAR O. MEREDITH, Breckenridge; FRANK A. HUDSON, CLAUDE B. MEYER, Buffalo; EARL W. NETHERTON, Gallatin; MAURICE E. GRIER, HENRY H. OLSEN, JOHN M. SINGLETON, Kansas City; WILLIAM E. LOCKWOOD, Potts; CHRIS. M. SAMPSON, St. Joseph; CARL J. ALTHAUS, EDMOND BECHTHOLD; THOMAS L. DRANEY, JOSEPH L. FERRIS, LLOYD L. HEID, GEORGE H. MILLER, WILLIAM S. REILLY, WILLIAM J. SALISBURY, JOSEPH L. THURMAN, GEORGE L. TONELLI, OTTO J. WILHELMI, St. Louis; CLYDE W. PARSONS, Sweet Springs.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to his proper station,* from Camp Upton, Capt. IRA H. MILLER, Louisiana.

To St. Louis, Mo., for duty, from the Surgeon-General's Office, Major HANAU W. LOEB, St. Louis.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieuts. HENRY S. BROOKES, CHARLES H. MILLER, St. Louis. On account of physical disability not incident to the service, Lieut. JOHN N. DARROUGH, Kansas City.

Montana

To Camp Devens, Ayer, Mass., for duty, from Camp Grant, Lieut. ALEXANDER M. MacCAULAY, Great Falls.

To Camp Grant, Rockford, Ill., for duty, from Army Medical School, Lieut. WALTER E. ESTABROOK, Moccasin.

To Fort Riley for instruction, Capt. DUNCAN S. MacKENZIE, Havre.

To San Francisco, Calif., for instruction, and on completion *to Camp Kearney,* Linda Vista, Calif., base hospital, Lieut. WALTER I. FIREY, Roundup.

Nebraska

To Camp Custer, Battle Creek, Mich., base hospital, Capt. GEORGE B. BRASH, Beatrice.

To Camp Devens, Ayer, Mass., for duty, from Camp Dix, Capt. EARL B. BROOKS, Pawnee City; from Camp Grant, Lieut. ROBERT C. PERSON, Omaha.

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Capt. JAMES S. TAYLOR, Fairbury.

To Camp Sevier, Greenville, S. C., for duty, from Camp Dodge, Lieut. DANIEL FRANKLIN, Omaha.

To Chicago, Ill., Northwestern University School of Medicine, for instruction, from Fort Riley, Lieut. J. IRWIN LIMBURG, Walthill.

To Fort Riley for instruction, Capt. ALLAN J. CAMERON, Herman; Lieut. ARTHUR B. CRAMB, Tecumseh.

To Hoboken, N. J., base hospital, Lieut. FREDERICK W. BUCKLEY, Beatrice.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieut. JOSEPH H. BOYES, Hebron.

Nevada

To Fort Riley for instruction, Lieut. HENRY A. PARADIS, Montello.

New Hampshire

To Camp Jackson, Columbia, S. C., base hospital, from Fort Oglethorpe, Capt. NOEL E. GUILLET, Manchester.

To Fort Oglethorpe for instruction, Lieut. DENNIS L. BLACK, Nashua.

To report by wire to the commanding general, Northeastern Department, for assignment to duty, Lieuts. ELMER E. LAKE, Hampstead; FRED C. RUSSELL, Haverhill; CHENEY I. COLE, Henniker.

New Jersey

To Camp Cody, Deming, N. M., with the board examining the troops for tuberculosis, from Camp Hancock, Capt. GRANT THORNBURN, Newark.

To Camp Devens, Ayer, Mass., base hospital, Capts. CLIFFORD R. NEARE, East Orange; JOSEPH A. MACLAY, Paterson. For duty, from New York, Lieut. DAVID C. THOMPSON, Bloomfield.

To Camp Dix, Wrightstown, N. J., base hospital, Capt. WILLIAM O'G. QUINBY, East Orange.

To Camp Sheridan, Montgomery, Ala., for duty, from Fort Oglethorpe, Lieut. ALFRED WOODHOUSE, Newark.

To Camp Upton, L. I., N. Y., base hospital, Lieut. CHARLES H. PRATT, Plainfield.

To Fort Oglethorpe for instruction, Capt. EDWARD S. SHARPE, Atlantic City; Lieuts. FRANK E. MASON, Carney's Point; HORACE W. JACK, Collingswood; SAMUEL S. FERN, Elizabeth; WILLIAM L. MADDEN, Jersey City; WILLIAM W. COX, Montclair; JOSEPH G. SAVANNAH, Newark; LOUIS J. BOHL, Paterson.

To Hoboken, N. J., for duty, from Army Medical School, Lieut. WALTER W. SCHMIDT, Cliffside; from Fort Oglethorpe, Lieut. ALBERT G. HULETT, East Orange.

Honorably discharged, Lieut. JACOB L. MATHESHEIMER, Jersey City.

The following orders have been revoked: *To Camp Gordon*, Atlanta, Ga., for orthopedic instruction, and on completion *to Fort McPherson, Ga.*, for further orders, from Fort Oglethorpe, Lieut. ALEXANDER J. McCRAE, Upper Montclair. *To Fort Oglethorpe* for instruction, Lieut. MAX KUMMEL, Harrison.

New Mexico

To Camp Grant, Rockford, Ill., for duty, Lieut. HOWE K. RIDDLE, Reserve.

To Fort McPherson, Ga., for duty, from Camp Lewis, Lieut. ALMONT A. HUBBARD, Van Houten.

To report by wire to the commanding general, Southern Department, for assignment to duty, Capt. CHARLES H. JAMESON, Albuquerque.

New York

To Aberdeen, Md., Ordnance Proving Grounds, for duty, Lieut. JAMES S. LYONS, Albany.

To Army Medical School for instruction, from Fort Oglethorpe, Lieut. LOUIS F. SANMANN, New York.

To Baltimore, Md., Johns Hopkins University, for temporary duty, from Camp Lee, Major RALPH A. KINSELLA, Lieut. FREDERICK D. ZEMAN, New York.

To Biltmore, N. C., for temporary duty, and on completion *to his proper station*, Major EDWARD K. DUNHAM, New York.

To Camp A. A. Humphreys, Accotink, Va., for duty, from Plattsburg Barracks, Lieut. DANIEL A. EISELINE, Sportsville.

To Camp Alfred Vail, Little Silver, N. J., for duty, from Camp Sherman, Lieut. ASA L. LINCOLN, New York.

To Camp Gordon, Atlanta, Ga., for duty, from Camp Sevier, Lieut. WILLIAM H. TAYLOR, Brooklyn; from Fort Oglethorpe, Lieut. JOHN G. F. HISS, New York.

To Camp Greene, Charlotte, N. C., base hospital, Lieut. LESLIE J. ATKINS, Orleans.

To Camp Lee, Petersburg, Va., base hospital, from Camp Meade, Major EDWARD W. PINKHAM, New York. For duty, from Fort Oglethorpe, Lieut. FREDERIC WASHNITZER, Brooklyn.

To Camp MacArthur, Waco, Texas, as orthopedic surgeon, from Army Medical School, Lieut. CHARLES GOLDMAN, Brooklyn.

To Camp Meade, Admiral, Md., for duty, Lieut. PATRICK J. HIRST, Middle Grove.

To Camp Sevier, Greenville, S. C., base hospital, from Williamsbridge, Major WATSON A. LAWRENCE, White Plains. For duty, from Camp Beauregard, Lieut. ROBERT FLANDERS, New York.

To Camp Shelby, Hattiesburg, Miss., for duty, from New Haven, Lieuts. HENRY M. SPOFFORD, Batavia; HENRY A. LATANE, McGregor. With the board examining the command for nervous and mental diseases, from Camp Dix, Capt. JOHN SCOTT RICHARDS, Randall's Island; from Camp Jackson, Lieut. HOWARD W. DAVIS, Poughkeepsie.

To Camp Upton, L. I., N. Y., base hospital, from Fort Oglethorpe, Lieut. HENRY M. SCHERER, New York.

To Camp Zachcary Taylor, Louisville, Ky, for duty, from Fort Oglethorpe, Lieut. CHARLES MAGGIO, Rochester.

To Fort Leavenworth, Kans., for duty, from Camp Zachary Taylor, Lieut. EMIL J. PELLINI, New York.

To Fort McPherson, Ga., for duty, from Camp Bowie, Capt. WELLINGTON A. LEBKICHER, Fordham; from Camp Wadsworth, Lieut. LOUIS CARP, New York.

To Fort Oglethorpe for instruction, Capts. GEORGE W. WILLCOX, Hamilton; GILBERT D. DARE, Morrisonville; EDWARD T. HIGGINS, New York; Lieuts. HARRY A. SCOTT, Batavia; LYMAN C. LEWIS, Belmont; WILLIAM PANITCH, Brainard; SAMUEL S. D. ARLUCK, ROBERT BAILIN, HARRY C. HARRIS, ISIDOR H. KUEL, THOMAS J. McKERNAN, MILTON A. MILLER, MAURICE MORRISON, THOMAS I. M. REID, Jr., HAROLD W. SHUTTER, MORRIS WINARD, Brooklyn; HOWARD D. HOEHMAN, VINCENT C. MOSCATO, Buffalo; WILLIAM H. JONES, Jamestown; JOHN V. SWIERAT, Kings Park; KENNETH A. SMITH, EDWARD A. TWIST, Lackawanna; MAX SONKIN, Long Island City; BRUCE M. M. PHELPS, Lowville; MAX ALEXANDER, FRANK A. BIEN, ALFRED F. CALVELLI, JAMES M. CRONK, LEO FUSKE, JOSEPH GOLDSTONE, ALFRED J. HART, KENT W. JARVIS, EDWARD J. LORENZE, NORMAN C. MARVEL, CHARLES MESTER, JOHN J. REID, Jr., ARTHUR B. SULLIVAN, MICHAEL J. SWEENEY, ABRAHAM J. WEINGART, New York; EDWARD S. AMSLER, NORMAN J. PFAFF, Rochester; EARLE C. WINSOR, Rockwell's Mills; HARRY S. RENOLDS, Schenectady.

To New Haven, Conn., for duty, Lieut. STANLEY L. WANG, New York.

To New York City, Bellevue Hospital, for instruction, and on completion *to Newport News, Va.*, for temporary duty, Capt. CHARLES E. HAWKES, New York.

To report by wire to the commanding general, Eastern Department, for assignment to duty, Lieuts. OTIS H. BRADLEY, Hudson; ARTHUR BESEMER, Marion; OTTO PFAFF, Oneida.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. JOSEPH P. LADUCA, Buffalo. For instruction in the treatment of infected wounds, and on completion *to Camp Upton, L. I., N. Y.*, base hospital, Capt. FRANCIS C. GOLDSBOROUGH, Buffalo. On completion *to his proper station*, from Camp Dix, Capt. EDWARD H. PERSHING, Woodmere.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, Capt. RICHARD L. J. KEMEL, New York; from Washington, Capt. HERMAN L. RAYMOND, Collins.

Resignation of Lieut. ABRAHAM SHORR, Brooklyn, accepted.

The following orders have been revoked: *To Camp Travis*, Fort Sam Houston, Texas, for duty, Lieut. LOUIS N. SMERNOFF, Jamaica. *To Fort Oglethorpe* for instruction, from New York, Lieut. FRANKLIN W. RICE, New York.

North Carolina

To Army Medical School for instruction, Lieut. FRANK J. GARRISS, Lewiston.

To Biltmore, N. C., for temporary duty, Major WILLIAM LEROY DUNN, Asheville.

To Camp Jackson, Columbia, S. C., base hospital, Lieut. ROBERT E. ABELL, Chester.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. EVANDER McN. McIVER, Jonesboro.

To Camp Sheridan, Montgomery, Ala., for duty, from Fort Oglethorpe, Lieut. GEORGE F. BULLARD, Elizabethtown.

To Fort McPherson, Ga., base hospital, from Camp Jackson, Major CHARLES S. LAWRENCE, Winston-Salem.

To Fort Oglethorpe for instruction, Capt. ARTHUR F. REEVES, Asheville; Lieuts. WILLIAM T. GIBSON, Batesburg; JUNIUS R. VANN, Jr., Fayetteville; EDWARD C. McCLEES, Lake Junaluska.

Honorably discharged, Lieut. JOHN M. BEARDEN, Lawrence.

Resignation of Capt. CHARLES DE W. COLBY, Asheville, accepted.

North Dakota

To Camp Dodge, Des Moines, Iowa, base hospital, Lieut. WALTER S. CHERRY, Enderlin.

To Camp Sevier, Greenville, S. C., for duty, from Camp Beauregard, Capt. BERNARD S. HICKERSON, Mandan.

Ohio

To Baltimore, Md., Johns Hopkins University, for temporary duty, from Army Medical School, Capt. RICHARD D. BELL, Cleveland.

To Camp A. A. Humphreys, Accotink, Va., for duty, from Fort Oglethorpe, Capt. SMITH E. McADOO, Akron; Lieut. ALFRED W. BALSLEY, Findlay.

To Camp Abraham Eustis, Lee Hall, Va., for duty, from Fort Oglethorpe, Capt. JAMES N. WYCHGEL, Cleveland; Lieuts. ELI F. RAMBO, Akron; FREDERICK SWING, Harrison; OSCAR H. HENNINGER, Ironton; RALPH T. SAUNDERS, Sandusky.

To Camp Gordon, Atlanta, Ga., for duty, from Camp Sevier, Lieut. GEORGE E. FLINN, Amesville; from Fort Oglethorpe, Capt. ZADOK F. ATWELL, Amsterdam.

To Camp Jackson, Columbia, S. C., base hospital, Capt. GEORGE L. CHAPMAN, Toledo.

To Camp Logan, Houston, Texas, base hospital, from Fort Oglethorpe, Capt. EDWARD C. LUDWIG, Columbus.

To Camp Shelby, Hattiesburg, Miss., with the board examining the command for nervous and mental diseases, Lieut. CARL W. SAWYER, Marion.

To Camp Sheridan, Montgomery, Ala., base hospital, Capt. LOUIE C. COSGROVE, Swanton.

To Camp Wadsworth, Spartanburg, S. C., base hospital, Lieut. BARTON L. GOOD, Van Wert.

To Fort McPherson, Ga., for duty, from Camp Wadsworth, Major FRED FLETCHER, Columbus.

To Fort Oglethorpe for instruction, Capts. EDWARD S. JOHNSON, Cincinnati; ALEXANDER M. STEINFELD, Columbus; CLARK G. AXLINE, Lancaster; WORTH T. GATCHELL, Ravenna; Lieuts. FRANK P. GERACI, MAX MAHRER, DAVID L. REES, Cleveland; GEORGE O. HOSKINS, Columbus; MERRILL D. PRUGH, Dayton; BURT A. MARQUAD, Dover; HARRY W. RECK, Gettysburg; JAMES C. McLESTER, Harrisville; JOHN F. HILL, McConnelsville; FRED E. HALL, Washington.

To Fort Riley for instruction, Lieut. FRANKLIN J. McDONALD, Leadville.

To report by wire to the commanding general, Central Department, for assignment to duty, Capts. LEROY B. HUMPHREY, Akron; JAMES A. McGREW, New Athens; Lieuts. JOHN P. SCHEIB, Columbus; THOMAS E. WALKUP, Dayton; JOHN WOLFE, Delphos; CLEMENT L. V. BELL, Fitchville; WILLIAM LEONARD, Fostoria; SHERMAN McKENNEY, Fremont; JOHN B. KRING, Galion; EUGENE G. HUSTED, Greenville; JOHN A. GRAEFT, Hamilton; JOHNSON S. HUNTER, Jackson; JOHN D. WATTERSON, Kalida; BENJAMIN C. PILKE, Monroeville; AGNUS A. MACKINTOSH, North Fairfield; JAMES O. WICKERHAM, Rockford; FRANK L. NEWBURG, Toledo; MAURICE L. SMITH, Urbana; FRANK B. GREGG, Wellington; OLIVER T. SPROULL, West Union.

The following order has been revoked: *To Camp Grant*, Rockford, Ill., for duty, from Hoboken, Lieut. GEORGE S. NUTT, Youngstown.

Oklahoma

To Camp Beauregard, Alexandria, La., for duty, from Fort Oglethorpe, Lieut. FRANK THOMASON, Drumwright.

To Camp Bowie, Fort Worth, Texas, base hospital, Lieut. ORION R. GREGG, Waynoka.

To Camp Cody, Deming, N. M., base hospital, Capt. RALPH E. WELLER, Pawnee; Lieut. GEORGE H. WALLACE, Cheyenne.

To Camp Fremont, Palo Alto, Calif., as assistant to camp surgeon, from Fort Riley, Lieut. HOWSON C. BAILEY, Sulphur.

To Camp MacArthur, Waco, Texas, base hospital, Lieut. CHARLES H. McBURNEY, Clinton.

To Camp Sevier, Greenville, S. C., base hospital, Lieut. RAYMOND R. HUME, Minco. For duty, from Camp Pike, Lieut. CLAUDE E. PUTNAM, Eakley.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from Camp MacArthur, Lieut. JOSEPH H. JANSING, Tryon.

To Fort McPherson, Ga., for duty, from Camp Bowie, Lieut. ETHAN E. WAGGONER, Tonkawa.

To Fort Oglethorpe for instruction, Lieuts. BENJAMIN G. JONES, Foss; SHERIDAN W. MATTOX, Marion; HARVEY V. DRESBACH, DUKE W. VINCENT, Oklahoma City; LAWRENCE H. CARLETON, Tulsa.

To Fort Riley for instruction, Lieut. JOEL R. HOLLIDAY, Oklahoma City; ALBERT B. HOLSTED, Temple.

To report by wire to the commanding general, Southern Department, for assignment to duty, Lieuts. JOSEPH M. POSTELLE, Oklahoma City; JOSEPH M. THOMPSON, Tahlequah.

Oregon

To Fort McPherson, Ga., for duty, from Camp Lewis, Major PAUL ROCKEY, Portland.

To Fort Riley for instruction, Lieut. CHARLES S. MENZIES, Portland.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Capt. WILLEY H. NORTON, Portland.

To San Francisco, Calif., for instruction, and on completion *to Camp Lewis*, American Lake, Wash., base hospital, Lieut. HORACE P. BELKNAP, JR., Portland.

The following order has been revoked: *To Camp Meade*, Admiral, Md., for duty, from Fort Des Moines, Lieut. RICHARD J. JAMES, Portland.

Pennsylvania

To Army Medical School for instruction, Lieut. EDGAR W. KEMNER, Philadelphia; from Camp Greene, Lieut. JOHN B. HAINES, Philadelphia; from Camp Jackson, Lieut. PAUL S. SEABOLD, Philadelphia; from Walter Reed General Hospital, Lieut. JOHN HAYES, Crafton.

To Camp Abraham Eustis, Lee Hall, Va., for duty, from Fort Oglethorpe, Major MALCOLM C. CROW, Media.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. LOUIS W. GROSSMAN, New Castle.

To Camp Meade, Admiral, Md., base hospital, Lieut. FRANK C. CARR, Swarthmore.

To Camp Sevier, Greenville, S. C., base hospital, Lieut. RAYMOND F. WIVELL, Pittsburgh. For duty, from Camp Sheridan, Lieut. NATHANIEL G. SHAFTITZ, Mont Alto.

To Camp Upton, L. I., N. Y., base hospital, Lieut. HORACE C. KINZER, Lancaster.

To Camp Wadsworth, Spartanburg, S. C., with the board examining the command for nervous and mental diseases, and on completion *to his proper station*, from Camp Jackson, Lieut. WILLIAM C. MILLER, Warren.

To Camp Wheeler, Macon, and *Camp Gordon*, Atlanta, Ga.; *Camp Jackson*, Columbia, S. C., and *Fort McPherson, Ga.*, for conference, and on completion *to his proper station*, from Camp Zachary Taylor, Major HERBERT FOX, Philadelphia. For duty, from Fort Oglethorpe, Lieut. ALBERT F. DUNSMORE, Barnesboro.

To Camp Zachary Taylor, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. HARRY ABRAHAM D. BAER, Abington.

To Fort Des Moines, Iowa, base hospital, from Camp Zachary Taylor, Capt. PATRICK J. McDONNELL, Archbald.

To Fort Leavenworth, Kan., for duty, Lieut. NORBERT D. GANNON, Erie.

To Fort McPherson, Ga., for temporary duty, from Camp Hancock, Lieut. DANIEL W. FRYE, Pittsburgh; from Camp McClellan, Lieut. AARON L. BISHOP, Philadelphia.

To Fort Oglethorpe, as assistant instructor in surgery, from Philadelphia, Capt. WALTER E. LEE, Philadelphia. For duty, from duty with the Council of National Defense, Major HENRY D. JUMP, Philadelphia; from Camp Lee, Lieut. REUBEN H. PEARLMAN, Pittsburgh; from Fort Oglethorpe, Lieut. JAMES J. O'CONNOR, Mildred. For instruction, Major WILLIAM C. MILLER, Harrisburg; Capts. JAMES V. HARSHA, Carrick; BRUCE LICHTY, Meyersdale; WILLIAM J. MERRILL, Philadelphia; WILBUR M. HOLTZ, Pittsburgh; JACOB K. LEVAN, St. Marys; Lieuts. CLARENCE C. ROGERS, Allentown; DANIEL F. FREDERICK, Ashley; BROOKLYN B. LEVENGOOD, Bellwood; ANTHONY M. BENNARDI, Bradford; FRANCIS B. EVELAND, GEORGE H. MILLER, Bryn Mawr; WILLIAM P. DODDS, Cabot; JOSEPH M. CORSON, Chatham Run; JAMES R. PARKER, Chester; THOMAS D. MILLS, Clarks Mills; SAMUEL T. McCABE, Defiance; SAM G. BECK, RALPH A. FISHER, Easton; JAMES A. M. RUSSELL, BARNEY B. SMITH, Erie; JAMES S. SEITZ, Glen Rock; PAUL M. BLACKBURN, THOMAS P. COLE, Greensburg; CLARENCE W. McELHANEY, RALPH E. PILGRIM, Greenville; WILLIAM A. BENNETT, Harrisburg; GEORGE C. SNEAD, Lynchburg; CHARLES W. DIXON, McDonald; WILLIAM E. SEIBERT, Fannettsburg; IRA M. HENDERSON, Petersburg; WILLIAM V. COYLE, HARVEY M. HAGSDORN, LOUIS MACKLER, WILLIAM H. PERKINS, REGINALD L. PREES, JOHN H. READING, JR., JOSEPH F. RICHARDS, MORRIS SEGAL, ALFRED R. SERAPHIN, RAYMOND L. SOMMERS, JAMES F. TALLEY, HARRY G. THIGPEN, Philadelphia; PAUL G. ATKINSON, SAMUEL A. BEDDALL, ANTONIO BIANCO, LOUIS C. MECKEL, TIMOTHY J. MORAN, EUGENE J. TRUSCHEL, CLARK W. WAKEFIELD, Pittsburgh; RALPH L. REBER, Reading; JOSEPH S. MILLER, St. Clair; ALVORDI J. SIMPSON, Summerville; LAWRENCE L. STEPP, Valencia; JAMES S. McCARTNEY, Washington; A. BURTON SMITH, Wyoming.

To Fort Riley, base hospital, from Camp Dodge, Lieut. THOMAS G. MILLER, Philadelphia.

To Hoboken, N. J., base hospital, from Camp Dix, Lieut. DAVID B. HAWKINS, Philadelphia.

To Lancaster, Pa., for duty, and on completion *to his proper station*, from Philadelphia, Lieut. CHARLES S. MILLER, Philadelphia.

To report by wire to the commanding general, Eastern Department, for assignment to duty, Capt. WALTER WEBB, West Chester; Lieuts. ELMER A. HUDSON, Carlisle; JOHN F. RUTHERFORD, Cranesville; EDWIN M. McCONNELL, Grove City; HARRY G. HASSENPLUG, Lancaster; ELMER N. PIPER, New Kensington; WALTER J. CATHRALL, North Bethlehem; JOHN E. MOORE, HOWARD REED, SAMUEL M. WILSON, Philadelphia.

To Richmond, Va., for duty, from Fort Oglethorpe, Capt. WILLIAM E. KRAMER, Pittsburgh.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Capt. EARL H. PERRY, Washington. For instruction in the treatment of infected wounds, and on completion *to his proper station*, from Camp Meade, Capt. SAMUEL R. SKILLERN, Philadelphia. On completion *to Walter Reed General Hospital* for temporary duty, Capt. RICHARD BRENNENMAN, Pittsburgh.

To Vancouver Barracks, Wash., for duty, from Markleton, Lieut. URBAN H. REIDT, Westmoreland.

To Walter Reed General Hospital, Takoma Park, D. C., for temporary duty, and on completion *to his proper station*, from Lakewood, Capt. ROBERT J. HENDERSON, Bowmansville.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieuts. OCTAVUS PEARL LARGE, FRANCIS A. STILES, Philadelphia; WILLIAM H. M. IMHOFF, Willow Grove.

Porto Rico

To Camp Abraham Eustis, Lee Hall, Va., for duty, from Fort Oglethorpe, Lieut. MARIANO B. CABALLERO, Humacao.

To Camp Las Casas, San Juan, P. R., for duty, Lieut. JUAN S. MARCHAN, Barceloneta.

Rhode Island

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Capt. WINTHROP C. LINCOLN, Lieut. JOSEPH W. BANNAN, Providence.

To Fort Oglethorpe for instruction, Lieuts. ARTHUR J. GAGNON, HENRY J. GALLAGHER, Providence.

To Rockefeller Institute for instruction in the treatment of infected wounds, from New York, Capt. HERMAN C. PITTS, Providence.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. ALFRED F. McALPHINE, Providence.

South Carolina

To Camp Devens, Ayer, Mass., as orthopedic surgeon, from Boston, Lieut. JOHN D. COLSON, St. Stephen.

To Camp Sheridan, Montgomery, Ala., for duty, Lieut. MILTON WEINBERG, Sumter.

To Fort Oglethorpe for instruction, Lieut. WILLIAM R. HAYNIE, Belton.

South Dakota

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Lieut. OSCAR W. TULISALO, Bellefourche.

To Fort Riley, base hospital, Lieut. DICKNEY W. CRAIG, Sioux Falls.

To Fort Sill, Okla., base hospital, Capt. BYRON A. BOBB, Mitchell.

To Hoboken, N. J., base hospital, Lieut. WILLIAM A. DELANEY, Mitchell.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieut. FRANCIS E. TOWNSEND, Nisland.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. FLOYD D. GILLIS, Mitchell.

Tennessee

To Camp Abraham Eustis, Lee Hall, Va., for duty, from Fort Oglethorpe, Lieut. BARNEY L. McDONALD, Idol.

To Camp Crane, Allentown, Pa., base hospital, from Camp Meade, Lieut. CHARLES P. EDWARDS, Kingsport.

To Camp Grant, Rockford, Ill., base hospital, from Rockefeller Institute, Lieut. JOHN F. BINKLEY, Nashville; from Camp Greene, Lieut. JOSEPH M. CLARK, Spring City.

To Camp Lee, Petersburg, Va., as orthopedic surgeon, from Fort Oglethorpe, Lieut. JOHN H. REVINGTON, Chattanooga.

To Camp Sevier, Greenville, S. C., for duty, from Camp Beauregard, Lieut. WILLIAM A. HOWARD, Cookeville.

To Camp Sheridan, Montgomery, Ala., for duty, from Camp Gordon, Major WILLIAM H. BALDWIN, Memphis.

To Fort Benjamin Harrison for duty, Lieut. JULIUS A. HAIMAN, Nashville.

To Fort Oglethorpe for instruction, Capts. JAMES H. McCALL, Huntingdon; JOHN E. HALL, Nashville; Lieuts. COLMAN C. BURNS, OSCAR M. LATEN, Memphis; SAMUEL C. COWAN, JESSE A. SANDERS, Nashville.

Texas

To Army Medical School for instruction, Lieut. OSCAR T. KIRKSEY, Galveston; from Camp Crane, Lieut. EDMUND D. MILLS, Galveston.

To Camp Abraham Eustis, Lee Hall, Va., for duty, from Fort Oglethorpe, Lieut. JOSEPH E. McDONALD, San Antonio.

To Camp Beauregard, Alexandria, La., base hospital, Capt. ROBERT T. MORRIS, Houston. For duty, from Fort Oglethorpe, Lieut. WILLIAM B. URMSTON, San Antonio.

To Camp Bowie, Fort Worth, Texas, base hospital, Lieut. ALFRED R. AUTREY, Port Arthur.

To Camp Cody, Deming, N. M., base hospital, Lieuts. EDWARD B. BRANNIN, Dallas; EARL C. AXTELL, Lipan.

To Camp Devens, Ayer, Mass., as orthopedic surgeon, from Boston, Lieut. HALL SHANNON, Dallas. For duty, from Camp Grant, Major CHARLES M. AVES, Houston.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. JOSEPH H. HICKS, Elkhart.

To Camp Grant, Rockford, Ill., for duty, Lieut. ALBERT L. MONDRICK, Bryan.

To Camp Jackson, Columbia, S. C., with the board examining the troops for cardiovascular diseases, from Camp Jackson, Capt. LORNE E. HASTINGS, Dallas.

To Camp MacArthur, Waco, Texas, as assistant to camp surgeon, from Fort Sam Houston, Major JAMES G. FLYNN, Galveston. Base hospital, Lieut. MERCER SWEARINGEN, Port Arthur; from Fort Oglethorpe, Capt. HAROLD E. NICHOLSON, Mobeete.

To Camp Sevier, Greenville, S. C., for duty, from Camp Beauregard, Lieut. JOSEPH J. ANDERSON, Coolege; from Williamsbridge, Capt. IRA E. PRITCHETT, Houston.

To Camp Sherman, Chillicothe, Ohio, for duty, from Camp Greene, Lieut. WIRT D. FOWLER, Liberty Hill.

To Camp Zachary Taylor, Louisville, Ky., for duty, from Fort Oglethorpe, Capt. JAMES R. GIBBS, Houston.

To Dallas, Texas, for duty, from San Antonio, Lieut. WILLIAM R. JOHNSON, Snyder.

To Fort McPherson, Ga., for duty, from Camp Gordon, Lieut. FREDERIC E. HUDSON, Anson; from Camp Wadsworth, Lieuts. ROBERT S. SUTTON, Bartlett; THOMAS P. McCLENDON, Wortham.

To Fort Oglethorpe for instruction, Capt. FERDINAND C. WALSH, San Antonio; Lieuts. WILLIAM C. WEDEMEYER, Burton; EMMETT C. SCHOOLFIELD, Denton; LOUIS G. PAWELEK, Falls City; EDGAR P. HUTCHINGS, Marlin; ASA B. PRITCHETT, San Marcus.

To Fort Riley for duty, from Rochester, Minn., Lieut. EDMUND C. HANCOCK, Temple. For instruction, Capts. JOSEPH A. DENMAN, Belton; JOHN O. McCALL, Brady. ROBERT A. DINWIDDIE, Clarksville; MARVIN De BERRY, Cuthand.

To Memphis, Tenn., Signal Corps Aviation School, for duty, from Mineola, Lieut. GEORGE P. RAWLS, San Augustine.

The following order has been revoked: *To Camp MacArthur*, Waco, Texas, as assistant to camp surgeon, from Fort Sam Houston, Capt. LYTTON G. AMENT, Victoria.

Utah

To Camp Cody, Deming, N. M., base hospital, Lieut. WALTER N. PUGH, Salt Lake City.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from Fort McPherson, Lieut. WEAVER A. RUSH, Logan.

To Fort Riley for instruction, Lieut. MAURICE M. CRITCHLOW, Salt Lake City.

Vermont

To Camp Devens, Ayer, Mass., base hospital, Capt. BENJAMIN D. ADAMS, Burlington.

To Camp Hancock, Augusta, Ga., base hospital, Lieut. HARRY H. LAWRENCE, Springfield.

To Camp Upton, L. I., N. Y., base hospital, Lieut. CHARLES N. PERKINS, Burlington.

To Fort Leavenworth, Kan., for duty, Lieut. ALLSTON L. FOGG, Underhill.

To Fort Oglethorpe for instruction, Lieut. CHARLES W. KIDDER, Woodstock.

To Newport News, Va., for duty, from Lakehurst, Lieut. LEONARD B. ROWE, Orwell.

To report by wire to the commanding general, Northeastern Department, for assignment to duty, Lieut. HENRY L. TILLOTSON, Groton.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. ALBERT J. GREENWOOD, Springfield.

Virginia

To Camp Meigs, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. ROSCOE F. THORNHILL, Richmond.

To Fort Oglethorpe for instruction, Lieuts. EVERETT R. ALTIMER, Cambria; RANDOLPH G. BROADDUS, Chance; STANHOPE B. BERKLEY, Grafton; GOODLATTEE V. GILMORE, Hampton; STUART D. WILLIAMS, Norfolk; EDWARD T. AMES, Painter; MASON ROMAINE, Petersburg; JOHN S. GILMAN, Richmond; WILLIAM T. GAY, OSCAR R. YATES, Suffolk.

To Hoboken, N. J., for duty, from Camp Dix, Major SAMUEL B. MOORE, Alexandria; from Fort H. C. Wright, Lieut. NATHANIEL F. RODMAN, Norfolk.

To New Haven, Conn., for duty, Capt. ALBERT G. FRANKLIN, Richmond.

To Plattsburg Barracks, N. Y., for duty, from Fort McPherson, Capt. CLAUDE D. KELLAM, Norfolk.

Washington

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Lieut. ROSCOE L. GHERING, Spokane.

To Camp Lewis, American Lake, Wash., base hospital, Capt. ARTHUR C. JOHNSON, Spokane.

To Fort McPherson, Ga., for duty, from Camp Lewis, Major HORACE J. WHITACRE, Tacoma; Capt. PAUL I. CARTER, Port Townsend.

To Fort Riley, base hospital, from Camp Lewis, Capt. CHARLES S. WILSON, Tacoma. For instruction, Lieut. WILLIAM E. STEELE, Olympia.

To Mineola, L. I., N. Y., Signal Corps Aviation School, for duty, from Fort Riley, Capt. CLINE F. DAVIDSON, Seattle.

To San Francisco, Calif., for instruction, and on completion *to Camp Cody*, Deming, N. M., base hospital, Capt. GEORGE A. GRAY, Spokane. On completion *to Camp Lewis*, American Lake, Wash., base hospital, Lieut. STEPHEN A. DEMARTINI, Tacoma.

West Virginia

To Camp Beauregard, Alexandria, La., for duty, from Fort Oglethorpe, Lieut. JOHN E. MILLER, Widen.

To Camp Hancock, Augusta, Ga., base hospital, Capt. KARL C. PRICHARD, Huntington.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. THURMAN E. VASS, Bluefield.

To Fort Oglethorpe for instruction, Capt. EDWARD McELFRESH, Point Pleasant; Lieut. HAMLINE N. DEEM, Lubeck.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieut. ISAAC R. LESAGE, Huntington.

Wisconsin

To Army Medical School for instruction, Lieut. EDGAR W. ALBERS, Milwaukee.

To Camp Custer, Battle Creek, Mich., base hospital, Lieut. BRAND STARNES, Mauston.

To Camp Devens, Ayer, Mass., for duty, from Camp Grant, Lieut. EDMUND H. MENSING, Milwaukee.

To Camp Dix, Wrightstown, N. J., base hospital, from Camp Crane, Lieut. CHARLES B. RYDELL, Superior.

To Camp Grant, Rockford, Ill., for duty, from Fort Riley, Lieut. JOHN R. SHEEAN, Milwaukee.

To Camp Sevier, Greenville, S. C., for duty, from Fort Oglethorpe, Lieut. ADAM L. CURTIN, Milwaukee.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. FREDERICK J. KORTHALS, Milwaukee.

To Fort D. A. Russell, Wyo., for duty, Lieut. ALBERT J. PULLEN, North Fond du Lac.

To Fort Des Moines, Iowa, base hospital, from Camp Zachary Taylor, Lieut. ERNEST L. HENNIG, Beloit.

To Fort Oglethorpe for instruction, Lieuts. HERMAN C. MEYER, LaCrosse; OTIS W. C. MAERCKLEIN, GEORGE G. WALL SCHLAEGER, Milwaukee.

To Fort Riley for instruction, Lieut. CLAUDE H. OLIVER, Boyceville.

To Jefferson Barracks, Mo., for duty, from duty as a contract surgeon, Capt. LOUIS M. WARFIELD, Milwaukee.

To New Haven, Conn., for duty, Capt. FRANK BROCKWAY, Oshkosh.

To report by wire to the commanding general, Central Department, for assignment to duty, Lieuts. THOMAS W. NUZUM, Janesville; WILLIAM A. EDWARDS, LaCrosse; FRANCIS J. DONNELLY, Moaches; EDGAR J. KNAPP, Rice Lake.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Personal.—Dr. William P. Hunnicutt, superintendent of the State Hospital for the Insane, Pueblo, has resigned. His resignation will take effect immediately. Dr. Hunnicutt will practice in Pueblo.——Dr. Charles H. Burgin, Delta, was operated on for appendicitis in the Red Cross Hospital, Salida, June 30, and is reported to be doing well.

Health Association Meeting.—At the annual meeting of the Colorado Public Health Association, held in Denver, July 10, the following officers were elected: president, James H. Pershing, Denver; vice presidents, Drs. Charles O. Giese, Colorado Springs; Richard W. Corwin, Pueblo, and Oscar M. Gilbert, Boulder, and treasurer, Charles S. Haughwout, Denver.

CONNECTICUT

Personal.—Dr. Henry N. Costello, Hartford, has been appointed medical examiner (coroner) for the Hartford district, succeeding Dr. Phillip D. Bunce, Hartford, who has entered the military service.——Dr. Henry F. Gill, Hartford, is reported to have been adjudged insane.

Progress in Yale University Medical School.—During the past year Yale University has raised the endowment of $2,000,000 which secures an additional half million from the general education board for the purpose of putting on the full-time clinical basis, the departments of medicine, surgery, and obstetrics and gynecology. Of this sum, $250,000 was given by the Carnegie Corporation. While it will not be possible during the war to completely organize the clinical departments mentioned this will be done as far as is possible. The contract with the New Haven Hospital has been amended so as to give the medical school complete control of the public wards. The organization of the New Haven Hospital has been altered as the result of recommendations made by Col. Winford H. Smith, Baltimore, after a survey. A closer affiliation between the Connecticut Training School for Nurses and the medical school has been brought about.

FLORIDA

Health Officers' Meeting.—State Health Officer William H. Cox, Jacksonville, has called a conference of health officers of the state, to be held at Jacksonville, August 1 to 3.

Personal.—Dr. William M. Bevis, Chattahoochee, has been appointed superintendent of the Florida Hospital for the Insane, succeeding Dr. H. Mason Smith, who has been called into the military service.——Dr. Van H. Gwinn, Jacksonville, has been appointed assistant state health officer.——Dr. Peter W. Butler, Leesburg, is reported to be critically ill at his home in Madison, Ga.

GEORGIA

Eugenic Marriage Bill Passed.—The eugenic marriage bill, requiring a man to present a certificate of health before the issuance of a marriage license, was unanimously passed by the state senate, July 10.

Association Headquarters Changed.—The headquarters for the Medical Association of Georgia together with the offices of the journal of the association have been removed from Augusta to 105 Capitol Square, Atlanta.

District Society Meeting.—The annual meeting of the Twelfth District Medical Society was held in conjunction with that of the Laurens County Medical Society at Dublin, July 10. A barbecue was given for the society at Spivis Park, and the following officers were elected: president, Dr. John K. Malloy, Milan; vice presidents, Drs. C. F. Walker, Swainsboro, and William R. Brigham, Dublin, and secretary-treasurer, Dr. Jason H. Moore, Dublin. It was decided to hold the semi-annual meeting with the Telfair Medical Society at McRae, in January.

ILLINOIS

To Uplift East St. Louis Status.—Dr. Grant L. Taylor, Bluford, supervisor of military zones in Illinois, conferred with Dr. Samuel S. Winner, Chicago, and local health author-

ities to bring East St. Louis up to military requirements. After a careful examination several of the cards placed on immoral houses where venereal diseases were suspected were removed and only six such placards remain.

Women's Clinics to Open.—The women's committee has granted to the Social Hygiene Committee of the State Council of Defense $100 a month for six months to employ a competent woman physician for clinics three times a week in connection with the Red League Dispensary. Dr. Pearlie M. Stetler, Chicago, has been secured and clinics will be held Wednesdays and Saturdays from 11 to 1, and Fridays from 6:30 to 8:30.

Personal.—Dr. Frank P. Norbury, Jacksonville, has been called to New York to serve for six months as acting medical director of the national committee for mental hygiene in war work, in cooperation with the office of the Surgeon-General. ——Dr. James M. Hancock, Chicago, who accidentally suffered the loss of an eye in a pistol duel between the police and a number of bandits, in February last, has made a plea before the council finance committee for $25,000 damages.——Dr. Heber Robarts, Belleville, suffered the amputation of the index finger of the left hand, July 12, because of an infection following the handling of radium.

MICHIGAN

Personal.—Dr. Slocomb R. Edwards, Calumet, has resigned as oculist and aurist to the Calumet and Hecla Mining Company and has also withdrawn from his association with Dr. John G. Huizinga, Grand Rapids, and has located at Stockton, Calif.——Dr. John W. C. Fleming, Pewamo, is said to have pleaded guilty for failure to report a case of chickenpox and to have been fined $15.

Tuberculous Soldiers.—The state war board has set aside about $21,000 for the treatment of tuberculous soldiers. The two pavilions built at Howell to receive tuberculous children, but which had not been opened on account of the lack of funds, have been set aside for soldiers. The money appropriated will be used for furnishing and equipping the pavilions, for supplying the additional help required, and for maintaining about forty beds for a minimum period of about twenty-five weeks.

MINNESOTA

Memorial to Colonel Todd.—The administrative board of the University of Minnesota School of Medicine, July 6, adopted a memorial to Lieut.-Col. Frank C. Todd, N. A., who died in Chicago, recently. Colonel Todd was a graduate of three colleges of the university and head of a department in the School of Medicine.

Health Organizations Merged.—At the meeting held, July 9, in St. Paul, by the Minnesota State Board of Health, Minnesota Public Health Association and the state advisory commission, resolutions were passed constituting the presidents of each of these bodies a permanent committee to be called the Minnesota Joint Health Committee, to correlate the work of these three organizations.

Personal.—Dr. Herbert O. Collins, city physician of Minneapolis and superintendent of hospitals, resigned, July 16, to become superintendent of the General Hospital, Winnipeg. The vacancy will be filled by civil service examination.——Drs. Jennings C. Litzenberg and Julius P. Sedgwick, Minneapolis, have been appointed members of the advisory committee of the newly created division of child conservation in the state board of health.——In the suit, brought in behalf of Willard Henningsen Dalsgaard by his father in which $10,000 damages were claimed on account of injuries received by the infant shortly after birth by reason of the physician's negligence, the jury is said to have awarded the plaintiff damages of $1,750.——Dr. Harvey F. Rawlings, of the staff of More Hospital, Eveleth, who was operated on for appendicitis last month in St. Joseph's Hospital, St. Paul, has recovered and has returned home.

MONTANA

Health Officers Meet.—At the annual meeting of the Montana State Health Officers' Association held in Butte, July 8 and 9, under the presidency of Dr. Lawrence Stevens, Laurel, Dr. Patrick H. McCarthy, Butte, was elected president, Dr. George A. Lewis, Roundup, vice president, and Dr. William F. Cogswell, Helena, secretary.

Personal.—Dr. John H. Phillips, Butte, sustained painful contusions of the chest and other injuries by the overturning of an automobile, July 6, and is under treatment in St. Peter's Hospital, Helena.——Dr. James E. Elliott, Bozeman, has been appointed health officer of Gallatin County, succeeding Dr. Herbert H. Judd, Bozeman, who has entered the military service.

State Society Meeting.—The fortieth annual meeting of the Montana Medical Association was held in Butte, July 10 and 11. Missoula was selected as the place of meeting for 1919, and the following officers were elected: president, Dr. Edward W. Spottswood, Missoula; vice presidents, Drs. Charles C. Wallin, Lewistown; Albert R. Varco, Miles City, and Alfred Karsted, Butte, and secretary-treasurer, Dr. Elmer G. Balsam, Billings. It was announced that there are 551 physicians in the state, 159 of whom have entered the government service.

NEW YORK

Health Insurance in Political Program.—The labor league of New York City is preparing to take a definite stand in the coming fall campaign to insure the welfare of its members and their fellow workers in New York state. In the program prepared for presentation at the Republican convention this organization comes out definitely as favoring the establishment of state-administered health insurance and the creation of a bureau of sickness prevention and health protection within the state labor departments; for the erection and maintenance of a tuberculosis sanatorium in each county, with county management and state supervision, and for old age pensions for citizens who at 60 years of age are without incomes and have been residents of the state for twenty-five years.

Child Health Organization.—A group of specialists in children's diseases met some time ago in the New York Academy of Medicine and organized a committee on the war-time problems of childhood. After a study of the problems involved the need of a larger organization was demonstrated. The matter was referred to Secretary Lane of the Department of the Interior who urged the formation of a national committee. As there are already so many organizations in existence working on these lines it was decided that this committee should be affiliated with the National Child Labor Committee. Accordingly an organization to promote the health of schoolchildren has been formed as one of the branches of the child labor committee. The program of this committee as outlined includes the following lines of activity: 1. To teach health habits to children and to secure adequate health examinations for all children in the public schools of the country. 2. To consider the urgent problem of malnutrition among schoolchildren. 3. To safeguard the health of children in industry. 4. To awaken the public to the necessity of conserving the health of schoolchildren as a basis of national security and stability. 5. To promote or cooperate with other bodies in securing legislation for the attainment of these objects. Among those on the executive committee are Dr. L. Emmett Holt, New York; Dr. Samuel McC. Hamill, Philadelphia; Dr. Godfrey R. Pisek, New York; Dr. Victor G. Heiser, New York, of the United States Public Health Service; Dr. Bernard Sachs, New York, and Dr. Thomas D. Wood, New York. The headquarters of the committee are at 289 Fourth Avenue, New York.

New York City

German Hospital Changes Name.—The German Hospital Society of Brooklyn has unanimously voted to change the name of the German Hospital of Brooklyn to the Wyckoff Heights Hospital.

Personal.—Dr. Abraham Jacobi has been unanimously elected honorary president of the Friends of German Democracy. He was honorary chairman of the German Unit in the Fourth of July parade. This is an organization of Americans of German descent who favor the destruction of the Hohenzollern rule in Germany.

Clinic for Disabled Soldiers and Sailors.—A clinic for the functional reeducation of disabled soldiers, sailors and civilians was opened at 5 Livingston Place, July 15. This clinic has been equipped through private subscriptions and is affiliated with the Cornell University Medical College. Students will be instructed in the methods which have so far been developed through the war as to constitute a new branch of medicine. Beds for thirty patients are provided in the hospital and many others can attend the clinic daily for treatment. The buildings have been leased from the New York Infirmary for Women which has suspended operation tem-

porarily. Dr. W. Gilman Thompson is director of the clinic. Treatment will be free for those unable to pay, but hospital patients referred by the city authorities or by accident insurance companies and the War Risk Insurance Bureau will pay for board, operations or treatment.

OHIO

Conservation of Nurses.—The Council of the Ohio State Medical Association at its quarterly meeting, June 30, in Columbus, adopted resolutions urging all physicians to economize in their demands in the nursing profession so that more nurses may be spared for foreign service under the American Red Cross. The council also voted unanimously to place at the disposal of the Surgeon-General its entire resources and to give government work preference over all other association activities.

Personal.—Drs. Fannie C. Hutchins, Cleveland; Nora Crotty, Cincinnati, and Eleanora S. Everhard, Dayton, have been appointed members of the medical section of the Ohio War Council.——The Common Pleas Court of Franklin County has ordered Dr. William H. White, Columbus, reinstated as medical examiner for the state industrial commission.——Dr. Bushnell R. Reynolds, Greenwich, has been appointed coroner of Huron County, succeeding Dr. Clement L. Bell, Fitchville, resigned to enter the military service.——Dr. Clarence W. Goss, Lancaster, who has been suffering from tuberculosis for several months is reported to be critically ill.——Dr. Robert H. Bishop, Jr., Cleveland, has resigned as health commissioner of Cleveland to take part in the Red Cross Antituberculosis Campaign in Italy. Dr. Richard A. Bolt, Cleveland, chief of the bureau of child hygiene will succeed Dr. Bishop as health commissioner.

PENNSYLVANIA

Personal.—Dr. Regina M. Downie of Beaver Falls has gone to France with the French Red Cross.——Lieut. David Reynolds Morgan, Edwardsville, has won the French war cross.——Dr. Philip Kamin, Pittsburgh, has succeeded Dr. David L. Simon as police surgeon of Pittsburgh.——Dr. John I. Van Wert, Patton, who has been under treatment in the New York Polyclinic since January 1, has returned home greatly improved.——Dr. Elizabeth Reifsnyder, Liverpool, who is home on an extended leave of absence from Shanghai, China, slipped and fell, while descending a flight of stairs in her home, spraining her ankle and sustaining other injuries.

Philadelphia

Personal.—Dr. Ray R. Willoughby has been appointed assistant medical inspector, bureau of health.——Major James P. Hutchinson, Philadelphia, is now commanding officer of American Red Cross Military Hospital No. 1, at Neuilly, France.

To Give Six Ambulances.—Supplementing their previous gift of four ambulances, the fellowship of the Pennsylvania Academy of the Fine Arts will give six additional machines to the service, the funds for which are to be raised by a campaign just started for that purpose by 600 members of the fellowship. Besides the ambulances, the fellowship has given seventy-four of its members to the service. The names to be given the six new machines are: James MacNeil Whistler, Auguste Rodin, Earl Kitchener, Cardinal Mercier, Admiral Sims' Fleet and General Pershing.

Byberry Buildings for Base Hospital.—Five large structures, including an administration building and four dormitories, forming the group of buildings now under construction for the use of the city's insane, at Byberry, have been tendered by the city, through Mayor Smith and Director Wilmer Krusen, of the department of health and charities, to the government as a military base reconstruction hospital. The offer was made by Director Krusen while in Washington on Thursday and was accepted by the Surgeon-General. The five buildings in question are surrounded by a tract of land containing about 200 acres. The four dormitory buildings will have accommodation for about 800 patients, but with a little adjustment the capacity can be increased to 1,000. Each building is about 50 per cent. completed, and fully 95 per cent. of the materials for finishing the structures is now on the ground. The cost of this particular group of buildings is $1,250,000. It was arranged at the conference that the Surgeon-General will cooperate through the vocational board of the Army, and that the personnel of the base hospital will be under the supervision of the Surgeon-General.

TENNESSEE

New Branches of Hospital.—The extensive improvements planned for the Knoxville General Hospital include three new departments, a contagious disease section, a maternity ward, and a children's department.

Licenses Revoked.—The licenses of Drs. Ben Friedman, Memphis; Warren S. Webb, Memphis, and A. L. Saunders, to practice medicine in Tennessee are said to have been revoked by the state board of medical examiners.

Service Flag Dedicated.—Memphis and Shelby County Medical Society dedicated its service flag, July 16, with appropriate ceremonies. The presentation of the flag was made by Dr. James L. Andrews, Memphis, and the address of acceptance by Dr. John L. Jelks, Memphis, president of the society. The flag bears seventy-nine stars.

WISCONSIN

State Board Election.—At the meeting of the state board of health at Milwaukee, June 26, Dr. George H. Ripley, Kenosha, was elected president, and Dr. John M. Dodds, Ashland, secretary.

Personal.—Dr. Albert M. Benson, Hartford, has been chosen state field agent of the Wisconsin Humane Society.——Dr. Anne I. M. Reed has been appointed senior physician of the Muirdale Sanatorium, Wauwatosa, in order to permit the release of Dr. George Allen for the military service.——Dr. Bartholomew Bantley, Hot Springs, S. D., has been appointed first assistant surgeon of the Northwestern Branch of Homes for Disabled Soldiers, Milwaukee.

Public Health Instructors.—For the last three years the Wisconsin Anti-Tuberculosis Association has been conducting courses for the instruction of public health nurses, admitting to these courses of instruction graduates of recognized training schools and supplementing their nurse's training by special work in public health service. More than fifty nurses have taken these courses and the communities into which they have gone have come to look to the Wisconsin Anti-Tuberculosis Association to supply them with competent health workers. The needs of the military service have drawn numbers of these nurses from community work and the positions left vacant by them have largely been left unfilled. The experience gained through conducting previous courses has shown that for the training of nurses as public health workers, the duties of the social worker, in her contact with the individual family and with the public, needed especial emphasis, and in the planning of the various departments of instruction for the new type of worker, this need has been constantly borne in mind. It has therefore been decided to train a new type of worker who will be termed a health instructor. The health instructor will not be a nurse, for it is evident that to give instruction in the principles of hygienic living, in the methods of preventing and avoiding tuberculosis, in inspecting schoolchildren, or in advising mothers as to the care of infants, training in the technic of bedside nursing is not indispensable; neither will she be a teacher as that term is usually understood. The health instructor will be an individual combining the functions both of the public health nurse and of the teacher in the schools She will be trained in the fundamentals of social service and after much the same manner that nurses have been given this same instruction in previous courses conducted by the Wisconsin Anti-Tuberculosis Association. In order to provide the most thorough instruction possible, the first class is being limited to fifteen in number. It is the expectation of the Wisconsin Anti-Tuberculosis Association that through this course of training, health instructors competent to do the work now being done by the public health nurse, and with a widened view and greater scope of understanding because of her teaching experience, can be prepared in a year's time, thus saving two of the three years necessary in a nurses' training, and at the same time, release the graduate nurse for her most important duty which demands a longer and more technical training.

CANADA

Hospital News.—By the will of a Mr. Ramsay, resident in Scotland, but who formerly had large financial interests in Toronto, the hospitals in Toronto and other public charities in that city will benefit to the extent of $750,000.——McGill University Hospital at Étaples, France, is to be removed to England, as it has been bombed from German airplanes on several occasions.——The Province of Alberta has appro-

priated $218,000 for hospital purposes in that province during the present year. There is a proposal on foot for the establishment of a tuberculosis sanatorium in the province to be built conjointly by the Dominion government and the Alberta government at a cost of $400,000.——Sir Adam Beck has presented to the Byron Sanatorium, London, Ont., a nurses' residence costing $30,000, in grateful appreciation of the recovery of his only daughter from a very severe illness.

Personal.—Col. Arthur E. Ross, M.D., M.P.P., exmayor of Kingston, Ont., who has been deputy-director of medical services for the Canadian Expeditionary Forces in France, is to be made chief medical officer of the Fifth Canadian Division with the rank of major-general. Recently the British authorities preferred a request for the services of Colonel Ross as director of medical services of one of the British armies in France.——Dr. Ernest A. Hall, Victoria, B. C., has offered to supply the Royal Jubilee Hospital of that city with his own electrical equipment and has also undertaken to supply a medical electrical expert for half a day per week free of charge. This is for the treatment of returned soldiers. ——Sir Edward Scott Worthington, a graduate of Trinity Medical College, Toronto, 1897, has been created a Knight Commander of the Royal Victorian Order. From 1899 to 1902, Dr. Worthington served in the South African War, was physician to the Duke of Connaught when governor-general of Canada. He went to the front in 1914.——Dr. C. E. Edgett, Western Canada, has received the D.S.O.——Major Charles Woolard has succeeded to the command of the Vancouver, B. C., military hospital, Col. Charles E. Doherty, New Westminster, B. C., having resigned.——Major A. D. Macdonald, Victoria, B. C., is now deputy commandant and assistant director of medical services of the Invalid Soldiers' Commission in British Columbia, with headquarters in Vancouver. ——Lieut.-Col. J. Alexander Hutchison, Montreal, is now consulting surgeon of the Canadian Army Medical Corps, succeeding Col. George E. Armstrong, Montreal.——Major John S. Matheson, Brandon, Manit., senior medical officer at the Canadian Clearing Station at Buxton, England, has gone to France to the No. 3 Canadian Hospital at Étaples.—— Capt. Henry Clinton Pearson, C. A. M. C. (Toronto), H. Tozer and E. M. Osborne, C. A. M. C., London, Ont., are reported wounded.

GENERAL

National Dental Association.—This association is to hold its twenty-second annual session in Chicago, August 5 to 9. At the general session of the second day—August 6—addresses will be delivered by Major-Gen. William C. Gorgas, Surgeon-General, U. S. Army, on "Consideration of Some of the Important Changes That Have Been Made in the Medical Department of the United States Army During the Past Four Years"; by Brig.-Gen. Robert E. Noble, on "The Surgeon-General's Plan for Maintaining the Health of Our Soldiers," and by Lieut.-Col. Horace D. Arnold, on "The Benefits to the Medical Profession and Schools from Higher Educational Standards." Col. Charles H. Mayo, Rochester, Minn., also will address the meeting.

Resolution on Antinarcotic and "Soft Drink" Regulation.—On July 13, Senator Frelinghuysen submitted the following resolution, which was ordered to lie over under the rule, and referred to Committee on Contingent Expenses:

WHEREAS, It is openly charged by scientific men and statisticians that the use of narcotic and habit-forming drugs is largely on the increase, not only in the form of opium, morphin, cocain, heroin and kindred opiates, but also certain so-called "soft drinks" charged with caffein, sold at innumerable fountains to our young men and young women; and

WHEREAS, It is alleged that in the neighborhood of many of our military camps purveyors of these deleterious drugs are to be found, stealthily engaged in the sale of the same to our soldiers; and

WHEREAS, Certain caffein-charged "soft drinks," so called, notoriously injurious to health, are openly sold to men in uniform; and

WHEREAS, Not only is the morale of soldiers and of our young men and young women in general sensibly lowered by the prevalence of this habit; and

WHEREAS, It is estimated that the actual money loss to the nation, by reason of this state of affairs, amounts to hundreds of millions of dollars annually; and

WHEREAS, The economic loss in wasted lives, in sickness, loss of wages, accidents, incapacity and crime, probably aggregates hundreds of millions of dollars additional; and

WHEREAS, The existence of this evil has a demoralizing effect upon the efficiency of our Army, to a degree not appreciated by the general public: therefore, be it

1. *Resolved by the Senate and House of Representatives of the United States of America in Congress assembled*, That the President of the United States be, and he hereby is, authorized to appoint a commission of citizens of the United States, not exceeding three in number, to make inquiry into the subject of narcotic and habit-forming drugs.

2. The said commission shall investigate the causes which lead to the use of such drugs, the extent of the use of such drugs and the kinds of drugs used, and shall also investigate the subject of the drug addict and such other factors as in its judgment have an important bearing upon the use of narcotic and habit-forming drugs, and shall recommend to the President the best methods in its judgment of regulating the importation, manufacture, sale and use of narcotic and habit-forming drugs, and of solving the problem presented by the drug addict.

3. The said commission shall report to the President on or before the convening of the next Congress, which report shall be transmitted by the President to Congress. The said commission shall select from its members a president and secretary, and shall meet at such places in the United States as it may deem advisable, and it shall have the power to subpoena witnesses and employ necessary assistants, provided the total expenditures under this resolution shall not exceed $50,000, and that all actual expenses shall be approved by the President of the United States, and he shall fix the amount of compensation to be paid each commission.

4. The sum of $50,000 be, and it is hereby, appropriated for the purpose above indicated.

FOREIGN

Death of Lesser.—The *Correspondenz-Blatt* states that Prof. E. Lesser, the Berlin dermatologist, director of the service for skin and venereal diseases at the Charité, died, June 6, aged 66. In the nineties, he was professor for four years at the University of Bern, Switzerland. Among his other works, his manual on skin and venereal diseases is perhaps the best known. It has passed through numerous editions.

Typhus and Influenza in Spain and Portugal.—The *Medicina Contemporanea* relates that there were only 159 cases of typhus at Oporto in the week ending June 8, which is a little larger figure than that of the preceding week but still represents a gradual decline of the epidemic. There had been no cases at Lisbon since May 29. The epidemic of influenza at Madrid is said to have attacked 200,000. It has appeared in other cities and in Portugal. The three day course of the fever seems to be the universal type. Certain medical students at Madrid have appealed to have another chance given them for examination as their examinations fell just at the time when they were all sick with the influenza; their request is said to have been granted.

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

South American Society for Hygiene, Microbiology and Pathology.—The second conference of this organization is to be held at Rio de Janeiro in September. The first met at Buenos Aires and Oswaldo Cruz was chosen as the president. Prof. Miguel Couto has been appointed to the vacancy left by the death of Dr. Cruz.

Deaths.—Dr. **J. T. Henao,** a leading physician of Bogota, Colombia, member of the house of representatives where he served on the committee for public instruction.——Dr. **C. Wallau,** director of the surgical clinic at Porto Alegre, Brazil, honorary member of certain foreign surgical associations and author of works on surgery and neurology.

Eugenics Society Organized at São Paulo, Brazil.—The leading physicians of São Paulo have organized a society to study questions of heredity and means to improve the human race. Its aims and purposes are set forth in an eight-page pamphlet, especially emphasizing the aim to enlighten and educate the public in matters relating to hygiene and eugenics, for the welfare of the individual, of the community and of future generations. The questions of the regulation of prostitution and physical examination of candidates for matrimony are also to be thoroughly studied.

Brazil Introduces State Quinin Service.—The *Brazil Medico* reports that the president of the republic has signed the bills appropriating 400,000 milreis for an "official service of quinin" in prophylaxis of malaria—"necessary for the sanitation of Brazil," and providing for the "organization of commissions of physicians and their aids to initiate the service of rural prophylaxis, combating the endemics which ravage the interior of the country." The president calls on every Brazilian to aid in this great campaign against endemic diseases in general. The success already attained in eradicating yellow fever in Rio, augurs well for the success of the new drive. That it has not been started before, he says, is due to financial reasons. Prof. M. Pereira aroused the country with his cry, "Brazil is a vast hospital," and the movement for prophylaxis on an extensive scale was soon inaugurated and this important step taken.

CUBA LETTER

HAVANA, July 15, 1918.

The Epidemic of Influenza

During the past month, nearly one fourth of the population of Havana was taken ill by an epidemic of a disease similar to the grip. The disease begins suddenly with high temperature, headache and backache, and lasts from three to five days, leaving in most cases a pronounced weakness. Other features are the lack of catarrhal symptoms, the discordance between pulse and temperature and the complete recovery, not a single fatal case being recorded. This condition is not a typical attack of the grip, and while most physicians think it is a mild and unusual form of this disease, others believe it to be the dengue or the three day fever. Dr. Guiteras states that three day fever is transmitted by a fly, the *Phlebotomus papatassii*, which has not been found in Cuba. Every one asks if this is the same disease that appeared in Spain not long ago and if it might have been brought to this country in the Spanish steamers.

Oldest Market in the City Closed

The secretary of sanitation has ordered the evacuation and demolition of the Plaza del Vapor, the oldest market in Havana, its sanitary conditions being very poor. A new temporary market has been opened in the old grounds of the Villanueva Railroad station.

Deficiency of Water Supply

The city of Havana enjoyed until a few years ago the privilege of having one of the finest spring waters in the world. The canalization of the springs of Vento was built in 1889 by Albear, a Spanish engineer; since then the population of Havana has increased from 200,000 to nearly 600,000, and therefore the necessity of more water is very badly felt. In many quarters of the city water does not reach the houses during certain hours, and the pressure is so low that seldom does the water reach the second floor without some pumping device. The shortage of water is becoming a serious problem, and the department of public works is being urged by the sanitary authorities and by the press to increase the supply by utilizing new springs that exist near Vento.

Personal

Dr. J. A. Simpson has been appointed to fill a vacant chair in the Academia de Ciencias.

Dr. B. Saenz has been appointed professor of dermatology of the University of Havana.

Dr. V. Pardo-Castello has been appointed chief of the department of dermatology and syphilology of the Municipal Hospital.

Death of Dr. Sanchez-Toledo

Dr. Miguel Sanchez-Toledo, professor of physiology at the University of Havana, died at his home, July 13.

BUENOS AIRES LETTER

BUENOS AIRES, June 10, 1918.

The State University System

There has been considerable agitation in university circles of late on the long debated question of the reform of the system of government of the different departments of the universities. University instruction is given exclusively by the state, and there can be no independent universities. The system previously in force at Buenos Aires was modified in 1916, and in 1918 a similar change was effected at the University of Cordoba. Before this the government of the different departments was vested in the department itself, and the faculty elected its own members, and the election was for life. The different faculties of the university were represented in a superior council by two delegates and the dean. The faculties held no scientific meetings and limited their work to administrative functions. This undemocratic system elicited protests which culminated in a strike of the student body in Buenos Aires (1906), and this year in Cordoba. The regulations of the universities were modified in consequence. The principle was established that the faculties (*las Academias*) are henceforth to be exclusively scientific bodies, while the administration and the government of the whole university is entrusted to a representative board the members of which are to be elected by the titular professors and serve for four-year terms.

The agitation for reform has not been satisfied with these measures, especially as there are now considerable numbers of supplementary professors teaching complimentary courses. The reform movement demands still more democratic innovations. The principal bases for the various plans proposed for adoption are (1) a limited term and limitations to reelection of the rector of the university and the deans of the faculties, and they are to be elected at an assembly of all the professors. Some of the projects would give the vote in this matter to alumni who are not professors. (2) The executive board to be elected by all the professors without discrimination, with provision that the titular professors should outnumber the others. (3) Some of the projects call for a representation of the student body in the deliberations and vote.

A large number of projects have been drawn up by university advisers, groups of professors, faculties, etc., and they are to be discussed by the Consejo Superior Universitario, after consulting with the various faculties, at a meeting scheduled for June 16. The University of La Plata has already introduced the larger part of these reforms, although this university has no medical department, but has recently organized a preparatory medical course (to relieve the overcrowding at its sister university at Buenos Aires, only 37 miles distant).

The Campaign Against Tuberculosis

The financial means for combating tuberculosis are relatively deficient, not at all proportionate to the sums spent for the care of the insane. Various institutions and organizations have been conducting propaganda to increase the resources destined to combat this plague. Among others may be cited the *Revista Medica del Rosario*, which now publishes a special supplement devoted to and entitled "Prophylaxis of Tuberculosis." The circumstance that the president of the Liga Argentina contra la Tuberculosis, Dr. G. A. Alfaro, has been appointed president of the Departamento Nacional de Higiene signifies that important modifications are about to be realized. As one of the first steps it has been decided to create a special section for the study of this disease. The national government has imposed a 20 per cent. tax on the price of the tickets for the Loteria Nacional de Beneficencia and this additional amount is to be applied to the expenses of the campaign against tuberculosis. It is estimated that this will produce a revenue of more than two millions annually.

LONDON LETTER

LONDON, June 25, 1918.

The Cause of the War

Though the evidence that Germany planned the war and prepared for it for many years was complete even before the revelations of her ambassador in England, Prince Lichnowsky, yet, with incredible mendacity, German writers from the highest downward have always represented it as defensive. It may be remembered that soon after the outbreak the leading German scientists to the number of about 100, including Ehrlich, issued a manifesto to the world proclaiming the innocence of Germany. What their real opinions were one has no means of knowing, as they were evidently "mobilized" by the government to make this declaration. This is, of course, a purely political subject; but it has a special interest for physicians in view of a memorandum just published in the *Times* by the distinguished physiologist, Prof. C. S. Sherrington of Oxford. He made it at the time of a remarkable conversation with the theologian Professor Troeltsch, then prorector of the University of Heidelberg, Aug. 16, 1907. The memorandum shows that Professor Troeltsch said, "Great conflicts which arise when an old world power is destroyed by a new one must always be accompanied by many sad events—the war between Germany and England will be a matter of regret to me, although I recognize it to be a necessity." On being asked why war should be a necessity since no one in England thought of making war on Germany, Professor Troeltsch replied: "The war is a necessity for Germany because England has so much that it is absolutely necessary for Germany to possess in order to fulfil her rôle as a world state." Being asked what were the possessions which Germany so much desired, Professor Troeltsch said: "Ports and colonies in many parts of the world: Australia, South Africa, Hong-Kong, India. England is not really strong, but there has been no strong power to dispute these great sources of wealth with her. These sources of wealth must fall to a new world power, and that is clearly Germany." Professor Sherrington objected that "the age is gone by when one believed that

prosperity for one European nation could be achieved by its spoliation of another." Professor Troeltsch relied that "for Germany it was not merely a question of spoliation," and he proceeded: "Our Germans who go to America lose their tie to Germany; in spite of all our government can do, they cease to aid Germany and its future. We live in an epoch when again, as often in past ages, great movements of a people driven to conquest by the necessity for expansion are in progress. And, though I regret the heavy strokes that have to be given, I recognize that for Germany it is a necessity and that in fulfilling her destiny she will forward the history of the world. For instance, our work people are the best in the world; they know that, and they know also that their army and their navy are the weapons of blood and steel which can open the world and give them wealth and power as the competent directors of workmen who under their supervision would do more for the world than they would otherwise do. They know they can thus become rich masters themselves." Yet soon after the outbreak of war the Berlin correspondent in his letter to THE JOURNAL referred to the war as "an attack" on Germany by Russia, France and England!

Women and the Proposed Ministry of Health

A deputation, organized by the National Union of Women Workers, waited on Dr. Addison at the Ministry of Reconstruction to press for the immediate appointment of a ministry of health and to bring to his notice the following resolution, which had been passed unanimously:

> The National Union of Women Workers, realizing the vital importance of preserving the lives of infants and young children and of consolidating and improving the health of the whole community, earnestly urges on the government the immediate formation of a ministry of health, presided over by a minister of cabinet rank, and including in both higher and lower administrative posts men and women on equal terms. Further, it urges that this department should eventually comprise within itself the activities of the other central departments dealing with health, and should simplify and coordinate all local machinery concerned with the same subject.

Dr. Addison expressed sympathy with the movement and said he would favor an important share in the work of the central department being allocated to women. As far as the local authorities were concerned, the matter was largely in the hands of the women themselves who should exercise their votes and endeavor to secure the return of suitable women to the local authorities. The extension of the franchise to women would probably lead to increased activity in this direction. The help of women was specially valuable on the housing and health committees. It was due only to the war that further progress had not been made with regard to the formation of a ministry of health.

The Influenza Epidemic

An epidemic of influenza is raging in London and throughout the country generally. It is so prevalent that business is affected and a considerable proportion of the workers are absent from factories, shops, etc. It is the fashion to describe the disease as "Spanish influenza" because it has been heralded by a report of a mysterious epidemic in Spain which is supposed to be influenza. However, influenza is also reported as prevalent in the German army and the symptoms in the present epidemic differ in no way from the usual ones —fever, general aches, and irritation of the conjunctival, nasal and bronchial mucous membranes. The latter is slight and in some cases absent. The disease runs its course to recovery in a few days and is not attended by serious complications. Influenza is by no means a new disease, though when in modern times it first became epidemic in this country in 1889-1890 it was new to the majority of physicians, and was described as "Russian" influenza because it was supposed to have originated in Russia.

PARIS LETTER

PARIS, June 27, 1918.

Pupillary Reactions to Severe Shock in War Wounded

According to Dr. Lacroix, who read a paper on this subject at a recent meeting of the Société de chirurgie de Paris, the pupillary phenomena observed in shock occurring in the war wounded are as follows: Immobility of the pupil, persisting no matter how intense the light reflected into it; contraction of the pupil, more marked in nervous shock than in shock incident to hemorrhage, and in the latter instance it may be replaced by dilatation. This, moreover, is encountered in all forms of shock just before death takes place.

Le Comité d'assistance for Tuberculous Soldiers

The Comité national d'assistance aux anciens militaires tuberculeux recently held its annual meeting in the course of which the general secretaries read two reports detailing the work of the committee during the past year. The gross receipts of the *Journée des tuberculeux* exceeded 2,000,000 francs. Nearly 100 dispensaries and half a score of sanatoriums have been established in France. Many of these, following the example of Paris, have provided hospital accommodations for the tuberculous. All of these agencies have assisted a total of about 25,000 invalided tuberculous soldiers and they have instituted prophylactic measures, being assisted in this work by other organizations, notably the American.

The Lariboisière Hospital

At the time of the Courneuve catastrophe, March 15, 1918, when American assistance was given so freely, the personnel of the Lariboisière Hospital displayed exceptional devotion; therefore this hospital has been awarded the *médaille d'honneur* of the Assistance publique.

Swedish Gift to the French Red Cross

The central committee of the French Red Cross has received from Count de Cyldenstolpe, the Swedish minister, 70,000 francs which was raised in Stockholm at a *fête de bienfaisance*. Sweden in that way manifests its sentiments and sympathy for France in its relief work.

Death of Dr. Régis

The death is announced of Dr. Régis, professor of mental diseases at Bordeaux. This chair was established for Dr. Régis in 1913. His work, Précis de psychiatrie, has had several editions. He has also published interesting articles on general traumatic paralysis, the education of the abnormal psychic, the mental state of regicides, insanity in dramatic art, etc. In 1910 Régis was elected national correspondent member of the Academy of Medicine.

Marriages

COL. MATTHEW A. DE LANEY, M. C., U. S. Army, in command of the Pennsylvania Hospital Unit on the western front in France, to Miss Elizabeth R. Voltz of Philadelphia, in London, England, recently.

MAJOR ROBERT CLARENCE MCDONALD, M. C., U. S. Army, Englewood Station, Mo., on duty in Kansas City, to Miss Chlora Hortense Charles of Independence, Mo., June 20.

LIEUT. WILLIAM HENRY JOSEPH O'BRIEN, M. R. C., U. S. Army, New York City, on duty at Camp Shelby, Hattiesburg, Miss., to Miss Helen Isabel Carter, at Brooklyn, April 3.

LIEUT. WAVERLY STAFFORD TUCKER, M. R. C., U. S. Army, to Miss Emma Maude Martin of Newark, N. J., at Chattanooga, Tenn., June 15.

LIEUT. CLAUDE A. FRAZIER, M. R. C., U. S. Army, Knoxville, Tenn., to Miss Nina Frances Toney of Indianapolis, in New York City, June 22.

LIEUT. JOHN IGNATIUS MEAGHER, M. R. C., U. S. Army, Montclair, N. J., to Miss Jane Hoey of New York City, June 29.

LIEUT. FRANCIS JOSEPH MCCAULEY, M. C., U. S. Navy, Washington, D. C., to Miss Eilleen Berry of Newark, N. J., June 25.

ASST. SURG. EDWIN PETERSON, U. S. Navy, to Miss Inez Augusta Willson, at St. Thomas, Virgin Islands, June 15.

JOSEPH WILLIAM ROWNTREE, Waterloo, Iowa, to Miss Marie van Engelken of Ocala, Fla., March 11.

LEWIS DEWITT HEWS, Rockwell City, Iowa, to Miss Jessie Pritchard of Spokane, Wash., July 3.

THOMAS GUSTIN ALLER, Philadelphia, to Miss Natalie E. Walton of Torresdale, Pa., June 1.

ANNY MERYA CAROLINE ERNESTINE PETERSEN to Mr. P. O. Saunders, both of Chicago, recently.

WESTLEY CINTRA COX, Brooklyn, to Miss Maxine Larson of Washington, D. C., June 1.

DON B. BIGGS, Findlay, Ohio, to Miss Eva Swope, at Felicity, Ohio, July 9.

PAUL VINCENT JOYCE to Miss Edna Callahan, both of Chicago, July 16.

Deaths

Major Morris Jacob Karpas, M. R. C., U. S. Army, New York City; Long Island College Hospital, Brooklyn, 1904; aged 39; a Fellow of the American Medical Association; a member of the American Medico-Psychological Association; chief of clinic of the New York Neurological Institute; assistant alienist to Bellevue and Allied Hospitals; adjunct neurologist to the Montefiore Home and assistant physician to the neurological department of Cornell Dispensary; on duty with the American Expeditionary Forces in France; is reported to have died from disease by the list of American Overseas casualties which appeared in the daily press of July 22.

Holt Couch Wilson, Portland, Ore.; University of Virginia, Charlottesville, 1876; Bellevue Hospital Medical College, 1877; aged 62; a member of the Oregon State Medical Association; professor of surgery in the University of Oregon Medical School; a member of the staff of the Good Samaritan Hospital, and medical director of the Columbia Life Insurance Company; who was operated on in the Good Samaritan Hospital, July 3; died in that institution, July 7.

Richard Wash Salter, New Orleans; Tulane University, New Orleans, 1892; aged 50; a Fellow of the American Medical Association; a specialist in ophthalmology and a member of the visiting staff of the Eye, Ear, Nose and Throat Hospital, New Orleans, for ten years; lecturer on diseases of the eye in the New Orleans Polyclinic; visiting oculist to the Charity Hospital; died at his home, July 7, from the effects of a gunshot wound, self-inflicted, it is believed, with suicidal intent, while suffering from a nervous breakdown due to overwork.

Capt. George Tupper, M. R. C., U. S. Army, Thief River Falls, Minn.; Northwestern University Medical School, Chicago, 1899; aged 46; a specialist in diseases of the eye, ear, nose and throat; who later practiced in California and Mexico, and was in Europe when the war broke out, and became attached to a medical division of one of the allied nations; is reported to have died recently in France.

Edward J. McOscar, Fort Wayne, Ind.; Jefferson Medical College, 1884; aged 57; a Fellow of the American Medical Association; local surgeon for the Grand Rapids and Indiana Railroad; physician and surgeon to St. Vincent's Orphan Asylum; who had been suffering from insomnia, due to a nervous breakdown, was found dead in his home, July 11, from an overdose of chloroform taken to induce sleep.

Capt. Addison John Provost, M. R. C., U. S. Army, Oshkosh, Wis.; Hahnemann Medical College, Chicago, 1891; aged 55; a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat; who had been on duty at Fort Riley, Kan., and later at Fort Bliss, Texas; died in the Army and Navy General Hospital, Hot Springs, Ark., July 7.

Samuel Thomas Day, Port Norris, N. J.; University of Maryland, Baltimore, 1889; aged 59; a Fellow of the American Medical Association; formerly president of the Cumberland County (N. J.) Medical Society, and a member and physician to the board of health of Commercial Township; died at his home, July 12, from gallstone disease.

James L. Watson, Toledo, Ohio; Toledo (Ohio) Medical College, 1891; aged 61; a member of the Ohio State Medical Association; formerly president of the Toledo Academy of Medicine; chief medical director of the Toledo Traveler's Life Insurance Company; died at his summer home, Clear Lake, Ind., July 11, from malignant disease.

Augustus William Potter, Lisbon, Me.; Bowdoin Medical School, Brunswick and Portland, 1884; aged 64; for six years superintendent of schools; for fifteen years chairman of the board of selectmen, and for several years town moderator; died at his home, July 11, from cerebral hemorrhage.

Died in the Service
IN FRANCE
LIEUT. WILLIAM G. HERRINGTON,
M. R. C., U. S. ARMY,
1884-1918
(*See The Journal, last week, page 214*)

Lieut. Arthur Murray Clare, C. A. M. C., Neepawa, Manit.; Manitoba Medical College, Winnipeg, 1917; aged 24; who left for the western front soon after graduation and was assigned to duty with the Durham Light Infantry; was instantly killed in the Aisne front in France, May 28, by a machine-gun bullet wound of the heart.

John Miller Stephens, Pasadena, Calif.; University and Bellevue Hospital Medical College, 1903; aged 39; a specialist on diseases of the eye, ear, nose and throat; while motoring between Santa Barbara and Paso Robles, Calif., was killed by the overturning of his automobile near Santa Maria, July 10.

Capt. Walter Soulard Johnson, M. R. C., U. S. Army, San Francisco, on duty at Camp Kearney, Linda Vista, Calif.; Long Island College Hospital, Brooklyn, 1899; aged 49; a Fellow of the American Medical Association; died in San Francisco, April 26, from suppurative meningitis.

Earl Bigham, Grand Rapids, Mich; Rush Medical College, 1885; Long Island College Hospital, Brooklyn, 1893; aged 60; a Fellow of the American Medical Association, and once president of the Kent County (Mich.) Medical Society; died at his home, July 5.

Charles I. Groves, Louisville, Ky.; University of Louisville, Ky., 1889; aged 53; a member of the Kentucky State Medical Association; coroner of Jefferson County from 1907 to 1909; died at his home in Kenilworth, July 2, from a congestive chill.

John Conrad Lemmer, Wilkinsburg, Pa., University of Maryland, Baltimore, 1885; aged 56; a member of the Medical Society of the State of Pennsylvania; the first medical examiner appointed by the Pennsylvania Railroad; died at his home, July 9.

Charles E. Doyle, Galesburg, Mich.; Detroit College of Medicine and Surgery, 1893; aged 56; at one time a Fellow of the American Medical Association; a member of the Michigan State Medical Society; died at his home, July 8, from cerebral hemorrhage.

James R. Lewis, Louisville, Ky.; Louisville (Ky.) Medical College, 1901; aged 57; until ten years ago a practitioner of Louisville, and since that time office manager of the Standard Printing Company; died at his home, July 3, from tuberculosis.

Alfred Drury, Princeton, N. J.; New York Homeopathic Medical College, New York City, 1900; aged 46; visiting physician to St. Mary's Hospital, Passaic, N. J.; died in Ocean Grove, N. J., July 9, from pneumonia.

Nelson Curtice Holt, Webster, N. Y.; Bellevue Hospital Medical College, 1896; aged 65; formerly financial secretary of the Rockefeller Institute for Medical Research; died suddenly at his home, July 8.

James Fleming Walker, Anniston, Ala.; University of Louisville, Ky., 1892; aged 71; a member of the Medical Association of the State of Alabama; a Confederate veteran; died at his home, July 10.

Jacob Pinckney Killian, Salem, Va.; New York University, New York City, 1871; aged 69; a member of the Medical Society of Virginia; died at his home, July 5, from cerebral hemorrhage.

Gideon B. Thomason, Alphretta, Ga.; Atlanta (Ga.) Medical College, 1882; aged 72; a Confederate veteran; was struck and instantly killed, July 5, by a Georgia Railroad locomotive.

Samuel Carlisle Meredith, Philadelphia; Jefferson Medical College, 1888; aged 63; also a druggist; a practitioner for thirty-five years; died at his home, July 12.

John James A. Doyle, Philadelphia, Jefferson Medical College, 1897; aged 43; died in Atlantic City, N. J., July 6, from the effects of overwork.

Aron A. Mendel, New York City; University of Jassy, Roumania, 1896; aged 50; died at his home, July 12.

Frank McAvinnue, Lowell, Mass.; University of Vermont, Burlington, 1889; aged 64; died at his home, July 7.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

DEPENDABILITY OF DOSAGE IN TABLETS

The tablet form of administering medicines is popular among many physicians because of its convenient availability and dosage. There is no doubt about the convenience of tablets, but the accuracy of the dosage content is not always to be depended on. One reason for this is that the demand for palatable and convenient "medicaments has led manufacturers to attempt to produce in tablet form mixtures which, from the nature of the case, are not suited to that method of compounding." In a series of painstaking experiments[1] on Bismuth, Opium and Phenol tablets, conducted a number of years ago in the A. M. A. Chemical Laboratory, it was shown that no tablets on the market then contained the amount of phenol the label indicated, the variation being from 12.3 to 112.5 per cent. Similarly the laboratory found that in the case of several different brands of Aromatic Digestive Tablets,[2] the amount of hydrochloric acid present in these absurd combinations was true to label in only one half of the specimens notwithstanding the fact that the amounts claimed to be present were ridiculously small; in two specimens there was no hydrochloric acid whatever present, while a third contained only a trace. These examples illustrated clearly the very evident unwisdom of attempting the pharmaceutically impossible merely for the sake of convenience or pharmaceutical "elegance."

Another reason for doubting the accuracy of dosage, irrespective of the characteristics of the drugs composing the tablets, has been the manifest lack of care in their manufacture. In 1914, Kebler[3] reported the results of a far-reaching investigation of tablet compounding in which he pointed out that tablets on the market were not as uniform or accurate as was generally believed, the variations being "unexpectedly large in numbers and amount." During the past year, the Connecticut Agricultural Experiment Station[4] undertook the examination of tablets—proprietary and nonproprietary—taken from the stock of dispensing physicians. The variations found in *weights* of the tablets were strikingly similar to those reported by Kebler.

VARIATION IN WEIGHTS OF TABLETS

Variation	Kebler Per Cent.	Connecticut Per Cent.
Less than 10 per cent.	43	44
More than 10 per cent.	57	56
More than 12 per cent.	44	35
More than 15 per cent.	28	26
More than 20 per cent.	9	10

The determinations of the *composition* of the tablets when compared with that claimed for them showed wide variation —from 54 per cent. above to 70.5 per cent. below; in almost two thirds of the tablets examined, the variation amounted to more than 10 per cent.; in three fifths of the tablets, the variation was more than 15 per cent.; in one fourth, more than 20 per cent., and in one twentieth, more than 50 per cent.; only in one eighth of the tablets was the variation less than 5 per cent. Allowing a tolerance in composition of 10 per cent., one or more products of the following manufacturers were found deficient: Buffington Pharmacal Company; Daggett and Miller Company; Drug Products Company; The Harvey Company; National Drug Company; B. F. Noyes Company; Progressive Chemical Company; Tailby-Nason Company, and John Wyeth & Brother.

The Connecticut investigators substantiate once again the work previously reported, namely, that there are a number of firms who are either incompetent or careless. For tablets of simple composition, a variation from the declaration of 10 per cent. should be amply sufficient to compensate for the errors of careful manufacture. It may be added that the best tablets originate generally from firms having competent chemical control.

1. Puckner, W. A., and Clark, A. H.: Examination of Tablets of Bismuth, Opium and Phenol, The Journal A. M. A., July 25, 1908, 330. Puckner, W. A., and Hilpert, W. S.: Tablets of Bismuth, Opium and Phenol, Dec. 17, 1910, p. 2169, May 6, 1911, p. 1344. Unreliable Pharmaceutical Products, editorial, May 6, 1911, p. 1335.
2. Puckner, W. A., and Warren, L. E.: Aromatic Digestive Tablets, The Journal A. M. A., Aug. 20, 1910, p. 710.
3. Kebler, L. F.: The Tablet Industry, Jour. Am. Pharm. Assn., 1914, **3**, 820, 937, 1062.
4. Bull. 200, Connecticut Agricultural Station, Food and Drug Products, 1917, p. 161.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DRAFTING OF PHYSICIANS—BUREAU OF NURSING

To the Editor:—1. Would a physician within the draft age, unmarried, classified in A-1 but placed in "limited service" classification on account of an ankle which was sprained fifteen years ago but which gives no trouble now, be inducted into service? 2. Is the government school for nurses now in operation? If so, to whom can one make application? C. O. J., Texas.

Answer.—1. Physicians drafted into the service are held as privates in the line. Division surgeons in the camps are instructed to receive the applications of such men for membership in the Medical Reserve Corps and to examine them. If successful, the candidate may be given a commission; if unsuccessful, he continues to serve in the department of the Army to which he has been assigned.

2. Yes. Apply to your Division Director of the Bureau of Nursing of the American Red Cross, Gulf Division, Post Office Building, New Orleans.

BISMUTH IODOFORM PETROLATUM PASTE

To the Editor:—Please give me the formula for the bismuth iodoform and paraffin paste now being used by Dr. Rutherford Morison; also his technic, if possible, of its use, and the reference to any articles on the subject. R. A. Bowdle, M.D., East Ely, Nev.

To the Editor:—A recent newspaper despatch describes the use of a preparation of bismuth iodoform and paraffin paste in the treatment of wounds in France. It was spoken of as "bipp." If this has been authentically reported, please advise me as to where it can be found. D. W. McLean, D.D.S., Mount Vernon, N. Y.

Answer.—Bismuth iodoform petrolatum paste was introduced by Rutherford Morison as a surgical dressing to check and remedy the spread of infection of wounds (*Lancet*, London, 1916, **2**, 268; *Brit. Jour. Surg.*, 1917, **4**, 659; *Brit. Med. Jour.*, 1917, **2**, 503; *Internat. Jour. Surg.*, 1918, **21**, 33). In Europe, the mixture is often termed "bipp," the word formed by the initials of the constituents. Until last October the formula generally given for the preparation of the paste was:

Iodoform, 16 ounces; bismuth subnitrate, 8 ounces; liquid petrolatum, 8 fluid ounces or a sufficient quantity. The powders are mixed together in a mortar, and the liquid petrolatum incorporated. The quantity of liquid petrolatum required varies according to the bulk of the powders, the bismuth in particular being liable to a considerable variation in bulk. A sufficient quantity should be added to form a paste. It is then advisable to rub down the paste, in small quantities at a time, on a slab with a spatula, to insure freedom from grit and dry particles of powder.

The formula, as revised by S. Dunstan, and also recommended by Morison is:

Iodoform	440 gm.
Bismuth subnitrate	220 gm.
Petrolatum	220 gm.

The bismuth and petrolatum are sterilized by dry heat at a temperature of 120 C. for half an hour, the bismuth after cooling is mixed with the iodoform in a mortar that has been sterilized by means of boiling water and solution of formaldehyd. The petrolatum is added to the mixture at a temperature of 90 C. and thoroughly mixed. Care must be taken in sterilizing that the temperature does not rise too high, otherwise nitrous fumes will be evolved.

A paste made by this method is found to be fairly solid in consistency, shows no signs of separation or decomposition, and is sterile, as certified by Dr. Slade, bacteriologist.

Should a paste be required of a softer consistency, the formula may be modified thus:

Iodoform	440 gm.
Bismuth subnitrate	220 gm.
Paraffin base	220 gm.
Paraffin base:	
Petrolatum	19 parts
Liquid petrolatum, specific gravity 0.880	40 parts

Morison in his recent book on "Bipp Treatment of War Wounds" (Henry Frowde Hodder and Stoughton, London, 1918) gives the following directions for its use:

1. Under an anesthetic, usually open ether, cover the wound with gauze wrung out of 1:20 phenol (carbolic acid), and clean the skin and the surrounding area with the same lotion.

2. Open the wound freely and, if possible, sufficiently to permit of inspection of its cavity. A guide—a finger is the best if the size of the wound permits of it, and if not a thick probe—should be introduced to the bottom of the wound and held there and fully exposed. In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest, and of muscles themselves does little harm as compared with that of the disability following nerve damage. Cleanse the cavity with dry sterile gauze mops, Volkmann's spoon, etc., and remove all foreign bodies.

3. Mop the surrounding skin and the wound cavity with methylated spirit and dry it.

4. Fill up the whole wound with bipp, and rub it well in with dry gauze. Then remove all excess, leaving only a thin covering over the wounded surface. Dress the wound with sterile gauze and cover all with an absorbent pad, which is held in position by adhesive plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain and constitutional disturbance. Should, however, discharge come through, the stained part must be soaked in spirit and a gauze dressing wrung out of it applied as a further covering.

Redressing is very simply done. After removal of the old dressing the wound is covered with a pledget of cotton soaked in spirit, and the sticky, dirty-looking discharge is wiped off the surrounding skin until it is clean.

A great number of favorable reports have been published on the use of bismuth iodoform petrolatum paste; also unfavorable reports have appeared, as the procedure is not without danger of bismuth and iodoform poisoning.

The following are some of the references on this subject:

Brander, H. S.: Bismuth and Iodoform Paste after Bone Grafting, *Brit. Med. Jour.*, 1917, **1**, 360.

Freilich, E. B.: Bismuth Poisoning Following Bismuth Paste Injection, THE JOURNAL, Jan. 13, 1917, p. 111.

Chambers, H., and Goldsmith, J. N.: Bacteriological and Chemical Action of Bismuth-Iodoform-Paraffin Paste, *Lancet*, London, 1917, **1**, 333.

O'Conor, Vincent, and Kreutzmann, H. A.: The Use of Bismuth Iodoform Paste in Outpatient Work, THE JOURNAL, Dec. 15, 1917, p. 2010.

Morison, Rutherford: The Treatment of Infected Suppurating War Wounds, *Brit. Jour. Surg.*, 1917, **4**, 659.

Hepworth, F. A.: Toxic Symptoms after Use of Bismuth-Iodoform-Paraffin Paste, *Lancet*, London, 1917, **1**, 573.

Phillips, John: Bismuth Poisoning and Nitrite Poisoning from Use of Bismuth Subnitrate, *Cleveland Med. Jour.*, 1917, **16**, 419.

Anderson, Louisa G., and Chambers, Helen: The Treatment of Septic Wounds with Bismuth-Iodoform-Paraffin Paste, *Lancet*, London, 1917, **1**, 331.

Colledge, L., and Drummond, Hamilton: Treatment of Recent Gunshot Wounds with Reference to Bismuth-Iodoform-Paraffin Paste, Compound Fractures, *Lancet*, London, 1917, **2**, 49.

Walker, E. H.: Treatment of Wounds with Bismuth Iodoform Paraffin Paste, *Brit. Med. Jour.*, 1917, **2**, 80.

Emerson, M. L.: Bismuth Iodoform Petrolatum Paste in the Treatment of Recent Wounds, THE JOURNAL, Jan. 12, 1918, p. 79.

Besley, F. A.; Treatment of War Wounds; Aseptic and Open-Air Treatment as Compared with Antiseptic Treatment, *Surg., Gynec. and Obst.*, 1918 **26**, 8; abstr., THE JOURNAL, Jan. 19, 1918, p. 195.

THE HARRISON NARCOTIC LAW AS APPLIED TO MEDICAL OFFICERS

To the Editor:—Will you kindly answer the following question: I am licensed to practice under the laws of the state of Ohio; I am also an assistant surgeon in the regular Navy. I wish to give a prescription for an opiate to the wife of a sailor whom I am called to treat in the regular discharge of my duty. I no longer pay the tax required by the Harrison law. Does this law permit the civilian druggist to fill my prescription? This question has come up several times, as the naval station is several miles from the town where most of the families of the enlisted men live, and an emergency often arises when the local druggist could supply the drug if permitted by law. Please omit my name.

T. E. W.

ANSWER.—We are informed by the local commissioner of internal revenue that a surgeon in the United States Navy can prescribe opiates without registration under the Harrison Narcotic Law if in discharge of his official duties; but in private practice he must qualify in the state in which he intends to practice.

A SAMPLE LETTER

To the Editor:—I am examining applicants of several counties for officers' commissions in the Medical Reserve Corps. Almost every one asks questions which are answered in your booklet "Information Regarding Appointment in the Medical Reserve Corps of the United States Army." If you would care to send a hundred copies, I can use them giving one to each applicant.

W. B. JONES, M.D., Rochester, N. Y.

ANSWER.—They have gone.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 3. Sec., Dr. L. P. Dawes, Juneau.

HAWAII: Honolulu, Sept. 9-13. Pres. R. W. Benz, 1141 Alakea St., Honolulu.

IOWA: Des Moines, Sept. 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Kansas February Examination

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Topeka, Feb. 12, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. Twenty-one candidates, including 1 nongraduate, were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University		(1908)	80
Rush Medical College		(1917)	80
College of Phys. and Surg., Kansas City		(1903)	79
University of Pennsylvania		(1917)	78

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Phys and Surg., Los Angeles		(1917)	California
Atlanta College of Physicians and Surgeons		(1910)	Oklahoma
Bennett Medical College		(1916)	Illinois
Northwestern University		(1912)	Iowa
Rush Medical College		(1905)	Illinois
Coll. of Phys. and Surg., Keokuk (1890) Nebraska;		(1895)	Missouri
Keokuk Medical College, College of P. and S.		(1902)	Iowa
University of Louisville		(1916)	Kentucky
University of Michigan Medical School		(1916)	Michigan
American Medical College		(1887)	Missouri
Missouri Medical College		(1896)	Missouri
University Medical College of K. C.		(1899) (1900)	Missouri
Washington University		(1917)	Missouri
Lincoln Medical College		(1917)	Nebraska
Jefferson Medical College		(1895)	Missouri
Memphis Hospital Medical College		(1892)	Missouri
University of Tennessee		(1915)	Texas
Western University		(1912)	Iowa

Illinois March Examination

Mr. F. C. Dodds, superintendent of registration, Department of Registration and Education, reports the practical and written examination held at Chicago, March 25-28, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 33 candidates examined, 20 passed and 13 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1916)	77.2, 79.1; (1917) 76.9, 78.6, 78.8, 85.3.
Chicago Hospital College of Medicine		(1917)	81.7
Loyola University		(1917) *; (1918)	75.8, 80.8
Northwestern University		(1917)	83.6
Rush Medical College (1885) 75.7; (1917) 80.7, 81.6; (1918) 79.4			82.1 84.2, 86.7.
Keokuk Medical College		(1898)	81.1
Queen's University		(1913)	75.1
	FAILED		
Bennett Medical College		(1914)	+
Chicago College of Medicine and Surgery		(1917)	56.7, 62.6, 70.5, 71.2, 72.7.
Chicago Hospital College of Medicine		(1916)	74.6
Jenner Medical College		(1916)	64.8
Loyola University		(1916) 72.9; (1917)	63.6, 72
Indiana Medical College (Purdue Univ.)		(1907)	71.0
University of Buffalo		(1882)	63.9

* No grade given.
\+ Failed in practical examination.

New Mexico Reciprocity Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that 6 candidates were licensed on credentials and 2 candidates were licensed through reciprocity at the meeting held April 8-9, 1918, at Sante Fe. The following colleges were represented:

College	LICENSED ON CREDENTIALS	Year Grad.	Total No. Licensed
University of Iowa School of Medicine		(1905)	1
Beaumont Hospital Medical College		(1900)	1

St. Louis University	(1905)	1
University Medical College of K. C.	(1904)	1
Miami Medical College	(1903)	1
McGill University	(1897)	1

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Drake University		(1908)	Iowa
Baylor University		(1916)	Oklahoma

Book Notices

LORD LISTER. By Sir Rickman John Godlee, Bt., K.C.V.O., M.S., F.R.C.S. Cloth. Price, $6. Pp. 676, with illustrations. New York: Macmillan Company, 1917.

If there is one name in the annals of medicine that towers above all others, it is that of Lister. This is especially true if the judgment is made on the basis of work resulting in the greatest benefit to humanity. Certainly the work of no other man, in medicine at least, has proved so epoch-making. The life of such a man is worth knowing, and Sir Rickman Godlee is to be congratulated on his successful presentation of this biography. It is more a review, step by step, of the work, than of the life, of the man: in a man of such accomplishments his work is his life. If any one had the impression that Lister's achievements were the result of chance or accident, that impression would be quickly removed on reading this biography, for it is clearly shown that Lister's final results were founded on hard research work that had its beginnings in his student days. In 1853, when only 26 years of age, he published a paper on the muscular tissues of the iris, and in the same year one on the muscular fibers of the skin. Two years later he was reporting on his investigation of the early stages of inflammation. Shortly after this he published papers on cutaneous pigmentation of the frog, on coagulation of the blood, and on spontaneous gangrene. From the beginning his letters, as well as his published papers, reflect the hard, painstaking research work of a genius. This early research work laid the foundation for that which was to follow. It was one step after another, leading up to the final grand results. His real surgical experimental work did not begin until he went to Edinburgh. Here he immediately came under the influence of Syme, whose daughter he later married.

There are those who would minimize the effect of Lister's work on the revolution in surgical methods and technic that occurred during the latter half of the last century, and would give the greater credit to Pasteur. It would, of course, be little more than guesswork to say what would have been the ultimate outcome of Lister's work if Pasteur's discoveries had not been made. As Pasteur himself said, "Chance only favors the mind that is prepared." Lister's mind was certainly prepared. He, and he only, was in a position to see and grasp the one thing he had been seeking—the real cause of suppuration. Sir John Batty Tuke, writing to Lord Lister in 1907, calls his attention to an incident that occurred in 1854. "You took down the dressing 'of a popliteal case' and found the wound healed except where the ligature was, and you said 'The main object of my life is to find out how to procure this result in all wounds; but why is it not healed around the ligature?' Boy-like, I said 'the irritation of the silk.' 'No,' you replied, 'not of, but in, or on.'" Lister did, to a certain extent, succeed in preventing putrefaction in noninfected wounds, but he had not learned why. Pasteur's work showed him why.

A former biographer—Wrench—in his "Lord Lister, His Life and Works," devotes a long chapter to an arraignment of those who have departed from "true listerian methods," and seems to regard any modification as unwise, if not sacrilegious, and to be deplored. Wrench is extremely harsh in his criticisms of those who are "devoted to that most modern, rather than to the most inspired, treatment" and ridicules what he regards as the unnecessary and extremely detailed methods of cleanliness of the moderns. While more conservative in discussing the subject, Sir Rickman Godlee also regards as regrettable the departure from Lister's teachings and practice. These discussions carry one back to the early days when Thomas Keith, Bantock, Lawson Tait and others, while recognizing the germ theory of infection, opposed the use of chemical antiseptics, claiming equally good results from rigid cleanliness and aseptic surroundings. The controversy at that time was bitter, and Tait was accused of misstatements of facts when publishing his results. But those who saw him operate were always ready to defend him. While not entering into the controversy, Thomas Keith reported equally good results by the aseptic methods. Our present biographer refers to the Caroll-Dakin "antiseptic" treatment of wounds as a harking back to true listerism, and regards this success as proof of the superiority of Lister's antiseptic over the modern aseptic methods. This, of course, is open to argument. However, the point the reviewer wishes to emphasize is that no man was more open-minded, more ready to acknowledge an error, or more anxious to adopt suggestions for improvement than Lord Lister during the time he was in active work, and it may be presumed that his views regarding phenol (carbolic acid) and other chemical antiseptics would have been decidedly modified as time went on, and as he saw what others were doing. For a number of years the spray was regarded as a necessary adjunct to every operation, or at least as an important factor; but as soon as Lister became convinced that it was not essential, it was discarded.

As the book was written for laymen it was necessary for the author to adopt a simple style and to use language which a medical man might regard as elementary, and to explain or describe conditions and technic in more detail than would otherwise be necessary; but this cannot be regarded as a fault, even from the point of view of the physician. On the contrary, the simplicity of language that is called for here and there, and the explanatory sentences and paragraphs that occur when necessary to make the matter understandable to the intelligent layman, make for easier and more satisfactory reading. Godlee's "Lord Lister" is a book that should be read by every physician. It shows what one man, by hard work and close application to one subject, can accomplish. But especially should it be read because it literally presents the contrast between the time when suppuration, hospital gangrene and often death were the accompaniments of surgery—even of the best surgeons—with the present time, when suppuration is practically banished, hospital gangrene has become unknown, and death seldom occurs.

REAGENTS AND REACTIONS By Edgardo Tognoli, M.D., Professor in the University of Modena. Translated from the Italian by C. Ainsworth Mitchell, B.A., F.I.C. Cloth. Price, $2 net. Pp. 228. Philadelphia: P. Blakiston's Son & Co., 1918.

In past years, the chemical profession was not very different from the medical profession of those times, or certain proprietary interests of today, as the scientific names of chemical composites, whether they were reactions or mixtures, were relegated to the background, in order that the personal name of the sponsor might be capitalized. Thus, to the confusion of students and practitioners of chemistry, there exists today as a heritage a vast number of tests and solutions, differentiated in the literature by meaningless proper nouns. Tognoli has collected the tests and has cross-indexed them in such a manner that the publication will serve as a useful reference epitome. He has not attempted, however, to alleviate the difficulty by giving the reactions sensible names. Certain purity tests for reagents are described, most of which are unnecessary to one who employs the U. S. P. test solutions. The book is recommended to those who need such a reference book, and who do not have the same material in larger works.

THE PRACTICE OF PEDIATRICS. By Charles Gilmore Kerley, Professor of Diseases of Children in the New York Polyclinic Medical School and Hospital. Second edition. Cloth. Price, $6.50 net. Pp. 913, with 136 illustrations. Philadelphia: W. B. Saunders Company, 1918.

In his preface to the second edition, Kerley says that twenty-five new articles have been added, sixteen chapters largely rewritten, and lesser changes made in many others. One of the advantages of this textbook is that there are numerous illustrative cases; among the disadvantages are some of the methods of treatment advocated by the author,

including, for the condition which he calls acute enteric intoxication, medication with 20 minims of brandy and 1 drop of the tincture of strophanthus for a child 6 months of age, and in colic, from 5 to 10 drops of gin in 3 teaspoonfuls of hot water to be repeated in ten minutes. When prescribing liquid petrolatum, he invariably refers to it as liquid albolene aromatic, thus specifying the preparation of a single firm. On the whole, the book is well worked up, contains a mass of material, and may be regarded a valuable reference work. Of course, the chief value of such textbooks depends on the material which is distinctly individual with the author; for instance, under the treatment of poliomyelitis he says: "The intraspinal use of human serum of those who have recovered from poliomyelitis has its advocates. My own observations do not warant an endorsement of this form of treatment." Under pneumonia he makes no mention of the various types of organisms or of the serum treatment.

A DIABETIC MANUAL FOR THE MUTUAL USE OF DOCTOR AND PATIENT. By Elliott P. Joslin, M.D., Assistant Professor of Medicine, Harvard Medical School. Cloth. Price $1.75. Pp. 187, with 17 illustrations. Philadelphia: Lea & Febiger, 1918.

This little manual will be found of great service by every practitioner who essays to treat diabetes. Its value lies in its stating in simplest form, stripped of all perplexing theories and confusing chemical formulas, the few cardinal facts that should be known regarding the nature of this disease in order that it may be intelligently and scientifically managed. This management, almost entirely dietetic, is clearly discussed, with all necessary detail, including illustrative cases and numerous tables and many recipes, so that the book is valuable for ready reference. The ordinary chemical tests of the urine that are employed in the cases are also described. The work is designedly elementary and can easily be understood and utilized by any intelligent patient as an aid in treating his own illness.

The book is so excellent and fills such a definite want that we refrain from making certain criticisms that seem justified, for after all, they concern rather questions of taste, protection and propriety than the real content of the work, which deserves only commendation.

RECLAIMING THE MAIMED. A Handbook of Physical Therapy. By R. Tait McKenzie, M.D., Professor of Physical Therapy, University of Pennsylvania. Cloth. Price $2. Pp. 128, with 115 illustrations. New York: The Macmillan Company, 1918.

This is a small, pocket-size book showing in very condensed forms what may be done by means of physical exercise to reclaim the maimed. The directions are brief and simple, and excellent illustrations contribute much toward making the meaning clear. The author has had abundant opportunity for study of these problems in the war hospitals of England and Canada. Many physicians will probably smile at his optimistic faith in the curative powers of some of the methods, as when he describes the simple way of handling shell shock by electricity; or disposes of the much discussed soldier's heart—D. A. H.—by dismissing it as clearly of nervous origin and readily yielding to "faradic or high frequency current through the thyroid, the sedative bath, gentle massage and rest," followed later by light gymnastic exercise and walking. The subjects discussed in the various chapters are medical electricity; the faradic current and high frequency; radiant heat and light; hydrotherapy; massage; reeducation; gymnastics and athletic games; treatment by occupation, and masking of facial deformity.

LABORATORY METHODS OF THE UNITED STATES ARMY. Compiled by the Division of Infectious Diseases and Laboratories, Office of the Surgeon-General, War Department, Washington, D. C. Medical War Manual No. 6. Authorized by the Secretary of War and under the Supervision of the Surgeon-General and the Council of National Defense. Leather. Price, $1.50. Pp. 256, with 5 illustrations. Philadelphia: Lea & Febiger, 1918.

This manual has been compiled by members of the Surgeon-General's staff, utilizing many standard textbooks. It is a collection of formulas and technical methods as a guide in carrying out laboratory examinations in stationary and field laboratories. It is a most practical, compact working handbook.

Social Medicine, Medical Economics and Miscellany

PSYCHOLOGY OF THE NATIONS AT WAR

Hon. James M. Beck, LL.D., New York, in the annual address before the Medical Society of the State of New York, traced an analogy between the war and the works of Shakespeare. "The master of analogy of all time was Shakespeare," he said. "Of all his analogies, those drawn from history are most notable, yet he never put on the stage such a stupendous tragedy of history as that which is now being enacted. This great drama now being enacted is one which has been drawn by this great portrayer of character in his 'Hamlet.' If one takes the nations today and the characters of 'Hamlet,' the analogy is perfect. Prussia is the usurping king of Denmark, who, in the summer of 1914, found the whole world sleeping in the garden of civilization. There was never a brighter outlook for the fraternity of nations than at this time; there was not the least cause for international friction. It was then that Prussia poured into the ear of the sleeping nations the cursed henbane which has cost the world the loss of at least 10,000,000 men, women and children. Shakespeare did not make the brother of the king of Denmark altogether bad. Claudius still had a consciousness that heaven was not deluded when he said, 'My words fly up, my thoughts remain below; words without thoughts never to heaven go.' Prussia has today a gnawing remorse at its soul of souls, as is shown by the words of the kaiser on three occasions, 'God knows I did not will it,' although he knows well that God knows he did will it; but this is as nothing as compared with the verdict the world has brought. It has put the brand of Cain on the brow of the German people, and in virtue of this verdict the cause of the Allies has already triumphed, for it has rendered an irrevocable verdict against Germany. Gertrude in the play is Germany in contradistinction to Prussia. Prussia is the royal family of Germany, the diplomatists, the professors, capitalists, and those in high places. Germany is the great people, the chemists, biologists, laboring people, small traders and so forth. It is vital that we should make this distinction between Prussia and Germany and the people. In dealing with Germany, it is necessary to go further than merely the Potsdam gang, we must say to Germany, as well as to Prussia, 'So long as you sit at the bar of the world cynical and unashamed, just so long we will not buy from you, we will not sell to you, and we will drive you as Cain was driven by the flaming sword of the angel from the gates of Paradise.'

"Who is Laertes? Laertes was a character in Hamlet who acted on his passionate impulse. He never started to reason or to think like men. Laertes is Austria. When the whole history of this war comes to be written, what a pitiful object Austria will be. Austria is the tool master of Prussia, and like Laertes, it has perished in its own poisoned foil. If Germany should be triumphant, Austria becomes merely a vassal state.

"The Rosencrantz and Guildenstern, whom Hamlet would just as soon trust as friends, are Bulgaria and Turkey. Who is Polonius? He was a precise old formalist, once a very able statesman, but unfortunately his brain had ossified into maxims and phrases. Although he discoursed most wisely, it was of the graphophone type of oratory. The Polonius of this world tragedy is Russia. There is one of the most notable tragedies the world will ever know. There crept into Russia those wise maxims and phrases that were the undoing of Polonius. It was peace without annexation and indemnities; down with capital; universal freedom; no order or discipline; peace without victory. All these specious phrases ran through the heart of Russia as poison, with the result that this mighty colossus of the north crumbled as no nation ever crumbled before.

"We now come to Horatio. One of the marvelous arts of Shakespeare is the fact that he could take a minor character and like a skilful surgeon, or an artist with a few sweeps of

the brush, can hold the mirror up to nature in a most extraordinary manner. In this minor character of Horatio, Shakespeare represents one of his noble characters. Besides the temperamental, emotional facility of Hamlet, he put this well poised, serene, steadfast soul, always true to his ideals, always loyal to his friends even unto death, and with a clarity of vision and keenness of insight that made him not only the noblest character in the play, but by all odds the one who had been given high rank and would have worked redemption without tragedy. Who has been the Horatio in this tragedy? I but anticipate your thoughts when I say France. What a world of apology the Anglo-Saxon races owe to France. The French people are so noble, so transfigured in the glory of self-sacrifice that words are powerless to say what you and I now think of France.

"Ophelia caught in the vortex of this world tragedy is obviously Belgium. Belgium can say with Ophelia, we know what we are, but we know not what we may be. There is one dissimilarity in this analogy because Ophelia is marked by weakness of character. No one would impute weakness of character to Belgium which, with a standing army of 100,000 men, with 750,000 Germans pouring into the frontiers, with a certainty of annihilation for the time being, held the gate as the Greeks did at Thermopylae, and it required the German army sixteen days to go through Belgium whereas the schedule prescribed six. All honor to Belgium, as we honor the Greeks.

"Who is Fortinbras? Fortinbras is the son of a Norwegian viking, who in 'Hamlet' comes in and marks the end of the play. Fortinbras is England, who saw no reason for entering a quarrel the issue of which was not clearly defined. It is England that made 'mouths at the invisible even.' On the night of the fourth of August, 1914, England said she was not concerned with the Belgian quarrel; that she was obliged to wait for some definite issue; but when Belgium, through the words of its noble king, appealed to the king of Great Britain for aid against the threatened invasion of the Germans, think of what that meant to England. There was no possible direct benefit to her in entering a quarrel, the ultimate outcome of which no human being could foresee. She had an incomparable fleet—yes, but her army consisted of only 250,000 men, one half of which was scattered to the four ends of the world, with which to defend her far flung empire, and how could she tell that India, with 250,000,000 of that race, might not rebel? How could she tell that South Africa, conquered ten years ago, might not rebel? How could she tell what would happen in Australia, New Zealand, Canada, or any of her far flung possessions? How could she tell if any disaster came to her fleet, what would happen? Yet England never hesitated when the king of Belgium appealed for aid. She sent her reply to Berlin that unless by midnight of August 4 she had a positive revocation of the order for the Germans to enter Belgium, she would fight at all hazards. No, she declared war, August 4, and by August 8, nearly 10,000 men were crossing the channel, and it was the Belgians and the British in taking their positions to the left of the French army that held like a stone wall at Mons and developed finally into the Battle of the Marne. It was that little army that by attacks and counterattacks put up a stone wall defense all the way back and gave General Joffre the opportunity to perfect his masterly strategy that culminated in the Battle of the Marne. England's honor was plighted to the defense of Belgium, and she 'made mouths at the invisible even' and staked her whole army on the issue of the struggle with twenty-four hours' deliberation after crossing the Belgian frontier.

"Who is Hamlet? In my judgment Hamlet is our own country, and in saying this I do not wish to be uncomplimentary to the United States. Hamlet is one of Shakespeare's greatest characters and his favorite child. He is the scholar, the courtier, the soldier, but he has one fundamental fault, and that fundamental fault America possesses. It is hard to tell what the character of this country may be in the future, but there was one fundamental fault in this country during the period which preceded our entry into the war. America, in its personality of a living citizenship, is composed of 100,000,000 human beings. In its historical personality America is the result of its history from the landing of the Pilgrim fathers, through the War of the Revolution, the War of 1812, and on through the Civil War. In its personality of a living citizen, America is swollen with material prosperity. The lesson of history is that material prosperity and luxury is the cause of national decay. We came out of the Civil War a strong and vigorous people, but of later years we have become surfeited with material things, just as Hamlet came from Wittenberg 'fat and scant of breath.' This was the position we found ourselves in at the beginning of the war. In our tradition and outlook we were provincial so far as world politics was concerned. History will record with horror our attitude during the early years of the war. If we had met the crisis that confronted us at the time of the sinking of the *Lusitania*, it is not too much to say that the cause of the Allies would have triumphed, and that the history of Russia would be very different. Our failure to be prepared and to meet the crisis in 1914 was not alone the fault of the government, but it was due to a psychologic defect in national character, to excessive development of the introspective faculty, to having centered our observation on internal affairs until it was almost too late. Hamlet perished because he was dilatory. It is to be hoped that the analogy will not be carried to the end in our case, but that we will awaken ourselves to vigorous action and save our national life."

The Child Delinquent in War Time

The story of child training in war time is more or less a story of enforced parental neglect, according to the reports that come from social workers, juvenile court judges, and students of criminology in the various European countries. Everywhere juvenile delinquency is growing, both in the number and the seriousness of the children's offenses. Everywhere the condition may be traced back to the same leading cause: The father is in the army, the mother is in the factory, and the usual safeguards of the home are broken down, depriving the child of the necessary discipline and protection. From every country, too, comes disquieting news of the collapse of various social agencies that supplement the work of the home. In England, the use of many schoolbuildings as hospitals, the overcrowding of the remainder, and the half-time reduction of school hours have played havoc with juvenile education. Young people's clubs have been left without leaders, school medical officers have been drawn into military service, and manual training in some of the schools has almost disappeared because of the absence of instructors. Parks and playgrounds have been closed, the probation system has suffered through the loss of many of its most experienced officers, and many children have entered industry, to become more or less demoralized by the abnormally high wages and the unusual freedom from discipline. From France come reports of the great increase of prostitution among young people, and of a relaxation of vigilance on the part of the courts and the police. Efforts are now being made to extend the powers of the French juvenile courts, which at present confine their attention exclusively to the child delinquent, so that the unoffending child dependent also may come under their jurisdiction. The new war-orphan law provides a kind of social guardianship for the child deprived of his natural guardians by the war. In Germany, economic conditions and antieducational influences are the chief reasons for the alarming increase of juvenile crime, which is committed almost exclusively by the poorer classes of children whose family life has been laid waste by the war. In Italy, where a reconstructive code for minors has been awaiting adoption since 1912, much has been said, but apparently little done, to solve the problem. One notable step toward the prevention of delinquency, however, was taken last July when the government adopted as wards of the nation the children whose parents or guardians have been killed in the war. In Russia, children's offenses take largely the form of vagrancy, theft and prostitution, the chief contributing causes being homelessness, evil industrial con-

ditions, and the absence of legal protection for girls. The army of homeless children is recruited from the following classes: soldiers' orphans, for whom the government has tried to make special provision; child volunteers, many of whom have found their way to prison, and refugee children, who are crowded together in cities amid appalling conditions. In short, the whole disastrous chapter of juvenile delinquency in Europe should serve as a warning to our own country to provide adequately for its children in war time, regardless of expense or sacrifice.

Medicolegal

Power of County Health Commissioners to Appoint Physicians to Take Charge of Cases of Smallpox

(Board of Commissioners of Pike County v. Kime (Ind.), 118 N. E. R. 595)

The Appellate Court of Indiana affirms a judgment for $102.50 in favor of plaintiff Kime, a physician, who was by the health commissioner of the county appointed in writing to take charge of a family in which there was smallpox, notwithstanding the defense was made that competent and duly licensed physician had been provided to render all medical services to the paupers and indigent persons of the township in which the family resided. The court says that the facts of the case brought it within the provisions of the statutes enacted to prevent the spread of infectious and contagious diseases and to protect and promote the health of the public. In carrying out the measures deemed necessary to protect the public health, the county health commissioner may act either in person or by deputy and may completely isolate the entire family afflicted with any disease liable to affect the public health. The fact that an indigent person was involved, and thereby items of expense were charged against the county that under ordinary conditions would have been charged to and paid by the individual citizen or by the township, did not change the character of the case or render the statute inapplicable.

The law takes cognizance of the fact that worthy, though indigent persons, as well as persons who belong to the pauper class and likewise those who are financially well to do, may be the victims of contagious or infectious diseases, and that their prompt isolation, care and treatment may be reasonable and necessary means of preventing the spread of the disease and protecting the public health. It is not the purpose of the law to pay for the care and treatment of afflicted persons who are amply able to pay such expenses for themselves, but it is the humane purpose of the health laws of Indiana to draw no fine distinctions which may prevent prompt action and delay efficient means designed to stamp out dangerous diseases and safeguard the public health. Where persons are so afflicted and so situated as in the case at bar, and are indigent and unable to pay for their necessary care and treatment, and the health commissioner has taken cognizance of the situation and appointed a competent physician to care for and treat the persons so isolated, maintain the quarantine and protect the public health, the jurisdiction and control of the health commissioner is complete, and the county may be held liable for all expense reasonably necessary to the protection of the public health. The decision of the health commissioner with reference to the necessity for action and the means to be employed, in the absence of connivance of fraud, is conclusive and final. The dominant purpose of the law is to protect and promote the public health. The fact that the means employed to accomplish the end in view incidentally benefits indigent persons unable to pay for their necessary care and treatment does not change the application of the law, but is clearly within the humane purposes of its enactment.

The changes in the statutes have centralized authority in the county health commissioner, and draw a clear line of distinction between indigent persons afflicted and quarantined as in the case at bar and the poor of the township under usual and ordinary conditions. There is no necessary conflict in the statutes when the purposes to be accomplished by the different laws are kept in mind and the emergencies are recognized which are necessarily encountered in protecting the public health. In this opinion the court is dealing with a case in which the afflicted persons were poor and unable to pay for medical treatment; but even in cases in which the afflicted and quarantined persons are able to pay for their care and treatment, under the present law, the decision of the health commissioner as to the means to be employed to protect the public health, including the care and treatment of such afflicted persons, is final and conclusive and binding on the county, unless the commissioner has abused the discretionary power lodged in him by the statute.

Refuses to Change Ruling Against Liability of Hospitals

(Magnuson v. Swedish Hospital (Wash.), 169 Pac. R. 828)

The Supreme Court of Washington affirms a judgment that dismissed the action brought by the plaintiff, a child, to recover damages alleged to have been sustained by him in that, after having been taken to the hospital and having had what was termed a severe surgical operation performed on him for a severe injury and physical malformation, the nurses negligently failed to guard him, by reason whereof he removed his hands from the bandages in which they had been placed and tore away the wrappings of the lacerated parts and otherwise seriously injured himself, so that the effectiveness of the operation was wholly destroyed and it was rendered impossible ever to cure the affliction from which he was suffering. The court says that the single question for determination was whether a patient admitted to a hospital maintained for charity can recover against such hospital for injuries caused by the negligence of nurses therein employed; but the judgment appealed from could not be reversed unless the former decisions of this court on the subject were overruled. Distinguished counsel for the plaintiff, with great earnestness and ability, insisted that the court should pursue the latter course, and adopt the rule announced by the Supreme Court of Alabama in *Tucker* v. *Mobile Infirmary Association*, 191 Ala. 572, 68 So. R. 4. But since it was conceded that the contrary rule is the one supported by the great weight of authority, and this court, unlike that one, is not free to act without constraint from former decisions on the subject, this court deems it better to adhere to its former decisions, which are confessedly in keeping with the rule announced in the vast majority of cases dealing with the question.

It must be admitted that there is some contrariety of opinion as to the true principles on which the rule of nonliability rests. One line of cases bases the doctrine on what is called "the trust fund theory," that is to say, that all funds of charitable corporations and associations are held in trust for the particular purpose for which the charity was founded, and it would amount to a breach of trust to apply them to other uses; that to give damages out of a trust fund would not be to apply it to the object which the author of the fund had in view, but would be to divert it to an entirely different purpose. Other cases lay stress on the idea that the rule of respondeat superior or let the master or superior answer does not apply to such institutions for the reason that the servants in the discharge of their duties are not engaged in work which is for the benefit or profit of the master. Still others proceed on the thought that one who accepts the benefit of the institution is taken impliedly to have assented to assume the risk of negligent injuries caused by servants properly selected and retained, or to have waived liability for such injuries. But regardless of the reasons on which the result is worked out, it cannot be doubted that the rule of nonliability is supported by the overwhelming weight of authority.

The question here involved seems peculiarly to have engaged the attention of the bench and bar of the country. The problem has been scrutinized from every conceivable point of view. The arguments for and against have well-nigh been exhausted, and little, if anything, now remains to be advanced. The doctrine now obtaining in this jurisdiction is undeniably in harmony with the consensus of judicial thought on the subject, and this court is not disposed to change it. While the application of the rule to individual cases may

sometimes seem harsh and the result regrettable, there are very few doctrines of the law of which the same may not be said with equal truth. When viewed in the light of a broader vision, however, this court is convinced that the individual hardships wrought are offset many times over by the encouragement and stimulation which the rule of nonliability gives to the establishment and maintenance by private charity of institutions devoted to the care of the halt, the lame and the blind, and to the relief of those suffering from physical or mental disease and affliction.

Loss of Sight from Embolus Not Accidental

(Salinger v. Fidelity & Casualty Co. of New York (Ky.), 198 S. W. R. 1163)

The Court of Appeals of Kentucky says that the plaintiff, a merchant 60 years old and apparently in good health, while in the act of lifting a bundle of boxes filled with corsets, and weighing about 24 pounds, to a shelf somewhat higher than his head, noticed that he could not distinctly see the numbers on the boxes, and found that he had lost the sight of one of his eyes. The physicians agreed that he lost his eye from embolus, or a floating clot in the blood vessels, which caused the blindness by lodging in the central artery of his eye, thus cutting off the blood supply and preventing circulation. The court holds that his injury was not caused by accidental means within the terms of a policy of insurance against bodily injury sustained through accidental means and resulting directly, independently and exclusively of all other causes in total or partial disability, and that in this action on such a policy held by the plaintiff in the defendant company the jury was correctly instructed to find for the defendant.

Society Proceedings

AMERICAN PEDIATRIC SOCIETY

Thirtieth Annual Meeting, held in Lenox, Mass., May 27-29, 1918

(Concluded from page 222)

Erosion of the Blood Vessels in the Course of Scarlet Fever

DR. JOHN HOWLAND, Baltimore: A child, aged 5½ years, was brought to the hospital with a diagnosis of diphtheria. The child developed no characteristic eruption during its illness. Subsequently albumin was found in the urine, and it was thought that the child had postdiphtheritic diphtheria. Twenty-three days after the onset, the child became very ill and a necrosis of the right tonsil was found, with a very foul secretion and a characteristic scarlet fever desquamation. There was a mass the size of an egg in the right side of the neck from which 2 ounces of pus were evacuated, but no blood. In the middle of the night the child was found exsanguinated, lying in a pool of blood. It was given salt solution subcutaneously and transfused with 250 c.c. of the mother's blood intravenously. An attempt was then made to examine the abscess cavity, when there was a gush of blood, apparently from the external carotid or the lingual. These vessels were ligated and the hemorrhage controlled. Another transfusion was given, and after that the child improved for two weeks, when there was a second hemorrhage, the result of the sloughing of the suture on the external carotid. After this the child went on to recovery, though convalescence was complicated by a psychosis.

DISCUSSION

DR. HOWARD C. CARPENTER, Philadelphia: At the Municipal Hospital of Philadelphia we had a case of cervical adenitis which seemed to be progressing satisfactorily. While the intern was in an adjoining ward the child had a sudden hemorrhage, apparently from the carotid, and within two minutes it was dead.

A Case of Hirschsprung's Disease

DR. WALTER LESTER CARR, New York: A girl, aged 6 years, was brought to the hospital in a condition of shock. The history stated that she had been constipated for five years and had vomited for twenty-four hours. The patient was cyanosed, the eyes staring, the temperature 97.5 F. and the pulse 120. The abdomen was distended, and there was a constant involuntary discharge of feces. The thirst was intense. Colonic irrigations of physiologic sodium chlorid solution were given with stimulation, heat, etc. The blood was viscid and not absorbed by Tallqvist paper. The child died eleven hours after admission. The anatomic diagnosis was Hirschsprung's disease, with secondary calcification of the lower part of the sigmoid and the upper part of the rectum.

A Case of Intussusception

DR. FRANK X. WALLS, Chicago: This case is reported to record an observation that was made in the fluoroscopic examination of the lower bowel which revealed a picture of great diagnostic value that is not dwelt on in the literature of intussusception. The patient showed the typical symptoms suggestive of intussusception. Fluoroscopic examination after the injection of a barium buttermilk enema from a height of 18 inches disclosed the barium entering the bowel, filling it from below upward, until the mass reached the middle of the transverse colon. Here the column of barium halted a moment; then a small stream of barium trickled from the heavy column along the periphery of the colon for a distance of about an inch, and after this the column did not advance or alter its position. The arrested barium then looked like a solid mass with a very decided, concave U-shaped termination. The boy was operated on immediately after, and an ileocolic intussusception about 3 inches long was found and reduced. A long appendix that was engaged in the tumor mass was removed. Recovery was prompt.

Death From Tuberculous Meningitis in a Breast-Fed Infant at Ten Weeks of Age

DR. DEWITT H. SHERMAN, Buffalo: This child was born in the winter, was breast fed, was not on the street, and the family history was negative as to tuberculosis. The child was taken ill at the age of 10 weeks and died seven days later. According to the statement of the child's father, a physician, the child showed no stupor or dullness. When I saw the child on the third day of its illness, the left eye was ptosed and the pupil of the left eye was larger than that of the right eye. The pupillary reaction was sluggish. There was some bulging of the anterior fontanel, slight rigidity of the neck, doubtfully exaggerated patellar reflexes, and the child could be aroused but made no further response. All other signs and symptoms of meningitis were wanting, except for slight twitching of the angle of the mouth. A specimen of the spinal fluid stained for tubercle bacilli showed only eight bacilli of the human type. The colloidal gold test gave no reaction that was significant in any way. A second lumbar puncture was done, and three guinea-pigs were injected. The findings in the three animals were practically the same, showing extensive tuberculous involvement of the liver, spleen and abdominal lymph glands. The lungs showed only a few scattered tubercles.

Use of Vegetable Milk

DR. HENRY DWIGHT CHAPIN and DR. LUDWIG KAST, New York: This milk is prepared from almonds which are first ground fine, covered with water, and allowed to stand in the icebox over night. The following day they are pressed out with a potato ricer or a fruit press, or they may be pressed out by hand through four layers of gauze. One hundred gm. of nuts may be covered with 200 gm. of water, and when they are pressed out they may be diluted up to 300 c.c. with water. The almond milk possesses certain advantages. It ferments much less easily than ordinary cow's milk; it has a higher fat ratio in the form of almond oil, which is sufficiently emulsified to render it easily digestible; the proteins contained in this milk are much less apt to undergo putrefaction than in the casein of cow's milk; almond milk contains a large amount of phosphorus and a small quantity of sodium chlorid, which would suggest its favorable employment in such conditions as rickets and nephritis; from its low carbohydrate content it will readily be seen that it is less likely to cause sugar fermentation. It has been tried in more than 1,000 adults, and

while some dislike it, actual disturbances have never been caused. So far no patients have shown an idiosyncrasy to it. This preparation is rich in vitamins. While we do not recommend its permanent use, it is desirable and useful as a temporary substitute, and has served a good purpose in such conditions as nephritis, typhoid, intestinal putrefaction, malnutrition, and secondary anemia.

Are the Present Frequency of Acute Otitis Media and the Subsequent Mastoid Operation in Some Measure a Reproach to Pediatrics?

DR. THOMAS S. SOUTHWORTH, New York: During the past winter I have had twenty-five cases of acute otitis media in a service averaging eighty infants under 15 months of age. These have been under the supervision of a visiting otologist, who has found in five of them indications of mastoid involvement; yet all have escaped operation, and discharge has ceased under treatment in all of the infants save one, which is nearly well now.

DISCUSSION

DR. SAMUEL S. ADAMS, Washington, D. C.: The preparations usually employed for allaying earache are a preparation of phenol, epinephrin and cocain. I have found that a 5 or 10 per cent solution of phenol in glycerin frequently allays earache, where there is inflammation of the middle ear; that is, where the membrane is red and inflamed but not bulging. When the membrane is bulging I believe we ought to call a skilled otologist.

DR. GODFREY R. PISEK, New York: Some otologists tell us that every discharging ear is partly a mastoid infection and that drainage of the external ear does little good, the only way to get proper drainage being to open the mastoid. I think the otologist often leans more to the side of operation, feeling that he takes fewer chances by so doing.

DR. FRITZ B. TALBOT, Boston: The problem of prevention lies in the prevention of colds, which are the cause of most ear troubles. There is one other thing important in the prevention of ear troubles. The baby's nose should be wiped and not blown, and the same applies to older children.

DR. I. A. ABT, Chicago: The membrane should be punctured only when there is bulging of the drum or a reasonable suspicion that there is pus in the middle ear. In the exanthemas and grippal diseases the pathologists tell us that there is more or less inflammation of the mastoid and antrum, and many of these patients recover without operation. One pathologist in Europe states that as many as 90 per cent. of children with exanthems and grippal infections have mastoid inflammation.

DR. HENRY HEIMAN, New York: I used to have three or four mastoid operations a year, whereas I now have only about one in ten years. Blowing of the nose in children tends to cause infection of the middle ear. It should also be remembered that snuffing salt water is a very dangerous procedure. Some teach that every red drum membrane should be opened. Frequently it is better to wait a little if one can see the patient every day. I have seen as many mastoids follow incision of the drum as in cases in which I have allowed the membrane to remain red for some time.

DR. L. E. HOLT, New York: It is wise to protest against too many mastoid operations. In the Babies' Hospital we have otitis all the time, perhaps twenty-five or thirty cases, and I think we have had only one mastoid operation in three years.

DR. ALFRED F. HESS, New York: In an institution in which there are 400 children, in the last five years we have had four cases of mastoiditis and we have had no cause of sinus thrombosis. The plan we have carried out is to puncture red and bulging ear drums.

DR. HERBERT B. WILCOX, New York: Many ear drums have been devitalized by douching with hot water, and the superficial layer of epithelium may be raised like a blister. Such an ear we need at times only incise through the outer layer and not through the drum. There is one point that the pediatrician fequently neglects; he may open the drum and evacuate pus and neglect to take a culture. Later if an otologist is called in he may have difficulty in interpreting the condition because he does not know what organism is causing it.

Relative Morbidity of Breast and Bottle Fed Babies

DR. H. M. MCCLANAHAN, Omaha: A questionnaire was sent to all the members of the American Pediatric Society and to thirty-nine other physicians in various parts of the United States asking their experience as to the relative susceptibility of breast and bottle fed infants, in reference to contagious and infectious diseases, and in reference to general infection. Questions were also asked as to the relative rate of growth and development, physical and mental, of breast and bottle fed infants, and requests were made for literature on the subject. An analysis of the seventy answers received may be thus summarized: 1. Superiority of breast milk may be due to chemical and biologic differences which render it more readily usable by the infant. As a result it has a more natural energy which it can apply to the invading organisms. 2. Breast milk may contain natural antibodies or protective ferments, both specific and nonspecific. 3. Breast fed infants are less susceptible to infections, the two exceptions being influenza and tuberculosis. 4. Breast fed infants resist infection more quickly and with less injury. 5. Breast fed infants have less morbidity than properly fed bottle infants; the larger group of badly fed infants have a still greater disadvantage.

Disadvantages of Low Fat Percentages

DR. ALFRED HAND, Philadelphia: Anything less than 2 per cent. is a low fat percentage; from 2 to 3 is moderately low; from 3 to 3.5 is a fair percentage; from 3.5 to 3.8 is normal, and anything above 4 is a high fat percentage in the artificial feeding of infants. If a low fat percentage is given over a long period, the general nutrition of the child is more or less permanently damaged. Children brought up on condensed milk and other proprietary foods with low fat and high carbohydrate content as a rule show distinct evidence of rickets. Constipation and failure to gain in weight are the two conditions that may be troublesome with the low fat percentages, and low protein as well, unless the carbohydrates are raised considerably above the amount existing in either human or cow's milk. As a temporary measure this may be of value, but it has always appeared to me as of more lasting benefit to overcome the constipation and increase the weight by raising the fat percentages as rapidly as possible. Several factors that seem to influence the handling of fat in the dietary are climate and the breed of cows. A child that may show intolerance to fat in the summer will handle, when cooler weather comes, even a high fat percentage with ease. The milk of cows containing 5 per cent. of fats is not as suitable for infant feeding as that containing 4 per cent. Cases are cited in which low fat percentages have been given evidently to the detriment of the baby.

DISCUSSION

DR. HENRY DWIGHT CHAPIN, New York: I am thoroughly in accord with Dr. Hand that there seems to be a sort of fat "phobia," because, I think, there has been an undue stressing of the fat percentages. While we may substitute one food element for another for a short time, we cannot make this substitution for any length of time without injury to the infant.

DR. THOMAS S. SOUTHWORTH, New York: Children who have had difficulty in digesting fats should not be deprived of fats for a long period; but when a child has been given a normal amount of fat for an individual of his age, and digestive disturbances have occurred, and when the child has improved after the withdrawal of the fat, it is well to remember that certain risks are run by giving excessive amounts of fat. I have increased fats and improved the condition of the child, and I have lowered the fats and improved the child's condition.

DR. JOHN LOVETT MORSE, Boston: I feel very strongly that babies are not given sufficient amounts of fats in artificial foods for their best good. One reason for feeding low fats is the inherent laziness of some physicians, who find it easier to give whole milk mixtures rather than to figure out the propor-

tion of fat and examine the stools. While babies should have fat in reasonable amount, it is only in exceptional instances that they can take over 4 per cent.

A Protective Therapy for Varicella, and a Consideration of Its Pathogenesis

DRS. ALFRED F. HESS and LESTER UNGER, New York: Thirty-eight children, between 3 and 4 years of age, were vaccinated intravenously with varicella vaccine. None of these children developed any local or general signs or any eruption suggestive of varicella, though all were in contact with one or more cases of varicella, with the exception of one child who developed the disease thirty-six days after the inoculation. Vaccinations of this kind induce neither local nor general reaction.

DISCUSSION

DR. FRITZ B. TALBOT, Boston: Since we do not know how the virus of varicella is transmitted, I should like to know how Dr. Hess knows that the thirty-eight patients were exposed to varicella. Again, how many children, as controls, had the same exposure? I do not feel convinced that the point has been proved.

DR. CHARLES HERRMAN, New York: Is Dr. Hess certain that the children that were not born in the institution never had varicella? If immune bodies are formed, one would expect to see some febrile reaction, and Dr. Hess says there was no such reaction.

DR. ALFRED A. HESS, New York: These thirty-eight children were in a ward in which there was chickenpox on two or three occasions and only one child developed chickenpox. It is possible that some of these children may have had the disease, but we had the history of all the children, and we looked for pox marks in every instance. However that may be, the number of vaccinated children that contracted the disease was in striking contrast to the number that usually take the disease. As to the absence of a febrile reaction, it is to be remembered that there is not a very marked febrile reaction in the disease itself, and if antibodies are being formed it is not to be expected that the reaction will be sufficient to cause fever.

Intrathecal Injections of Normal Horse Serum in the Treatment of Chorea

DR. LANGLEY PORTER, San Francisco: Intrathecal injections of horse serum have been administered to seven children suffering from chorea, and another patient has been treated by the method which Mahrtens of Stanford University is using in the treatment of cerebrospinal syphilis; that is, the injection of arsphenamin from six to twelve hours after the initial intrathecal dose of horse serum. One-half hour after giving an initial 0.5 c.c. of horse serum in order to find out whether the patient is hypersensitive to horse serum, 20 c.c. of normal inactivated horse serum were injected intrathecally. Five of the patients received a second injection on the fourth, fifth and sixth days following the initial dose. These injections have been instrumental in gaining striking and rapid improvement in most cases, but no improvement has been such that a cure could be claimed on the basis of "absolute" cessation of all twitching within a week. In fact, only in the mild cases was the twitching absent after two weeks. Our experience, however, has been such that we have a right to hope that further investigation will establish the serum as a valuable measure in the treatment of selected cases of chorea.

DISCUSSION

DR. OSCAR M. SCHLOSS, New York: We used this serum treatment in twelve cases, and those twelve patients did not do better than twelve control patients that did not get the serum. Some choreics may become better after the first, the second or the third dose, but frequently one sees the same thing in children treated by the usual means.

DR. CHARLES HERRMAN, New York: Was a certain amount of spinal fluid removed before the serum was employed? Was there an improvement after the withdrawal of the spinal fluid? It is possible that improvement may result from the relief of intraspinal pressure.

DR. L. E. LAFETRA, New York: In giving the serum treatment for chorea, it is not altogether a simple matter to draw off the blood, keep it sterile, and then inactivate it. For some reason we did not get brilliant results from the treatment Dr. Goodman recommends, and we did not feel that we were justified in continuing to use it.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

June, 1918, **46**, No. 3

1 Regulation of Renal Activity. Balance Between Regulation by Epinephrin and Pituitary Extract. T. Addis, A. E. Shevky and G. Bevier, San Francisco.—p. 129.
2 Effect of Holding Breath and of Rebreathing on Rise of Carbon Dioxid Tension in Lungs, and Determination of Carbon Dioxid Tension of Venous Pulmonary Air. H. Laurens, New Haven, Conn.—p. 147.
3 Location of Epinephrin Vasodilator Mechanisms. F. A. Hartman, L. G. Kilborn and L. Fraser, Toronto.—p. 168.
4 Metabolic Gradient Underlying Intestinal Peristalsis. W. C. Alvarez and E. Starkweather, San Francisco.—p. 186.
5 Secretin. Its Mode of Action in Producing an Increase in Number of Corpuscles in Circulating Blood. A. W. Downs and N. B. Eddy, Montreal, Canada.—p. 209.
6 Response of Vasomotor Mechanism to Reflex Afferent Nerve Stimulation. C. M. Gruber and O. S. Kretschmer.—p. 222.
7 Action of Autonomic Drugs on Surviving Stomach. M. I. Smith, Omaha.—p. 232.
8 Experimental Studies on Regulation of Body Temperature Normal Temperature Variations and Temperature Effects of Operative Procedures. L. M. Moore, San Francisco.—p. 244.
9 Id.: Relation of Corpus Striatum to Regulation of Body Temperature. L. M. Moore, San Francisco.—p. 253.
10 Nursing Mother as Factor of Safety in Nutrition of Young. E. V. McCollum and N. Simmonds, Baltimore.—p. 275.
11 *Shock and Circulatory Failure Following Trauma. C. J. Wiggers, New York.—p. 314.

11. Shock and Circulatory Failure Following Trauma.—Wiggers investigated the question whether pain and trauma can produce shock in experimental animals and compared the dynamics of the circulation in this condition with that following intestinal exposure. He found that a state of shock involving the central nervous system can be produced experimentally by trauma. This state may persist from two to five hours, after which recovery sets in; or it may be fatal. Prolonged sensory stimulation may cause a temporary depression of the functions of the central nervous system but in itself does not lead to permanent changes or death. Central nervous system shock never occurs without circulatory involvement which is always clearly indicated in optically recorded pressure curves from the arteries but is not necessarily evident in the mean pressure variations as given by the mercury manometer. In the milder cases of shock, that is, in those terminating in recovery, the circulatory derangement corresponds essentially to that described as characteristic in the initial and early progressive stage of circulatory failure in abdominal shock. Optical arterial pressure tracings show that a diminished volume of blood is contained in the arterial trunks and that the peripheral flow is thereby reduced. In most instances this is solely due to a reduction of the total arterial resistance while the effective venous pressure becomes somewhat increased through the mechanical effects of prolonged deep breathing. In a few cases only was the effective venous pressure reduced somewhat and constituted the main cause of arterial depletion.

In severe forms of shock, that is, in those terminating fatally, the initial stage in which reduced peripheral resistance plays a rôle is of short duration, the effective venous pressure falls early, reaches a low level and by reducing the cardiac discharge, is the chief cause of complete circulatory failure. The dynamic changes of the circulation which lead to progressive and complete circulatory failure are not essentially different in shock produced by trauma and that produced by intestinal exposure. The differences, if any, are in

degree and duration of the respective phases but not in the character of the disturbance. Considering all the available evidence, two factors may be said to be concerned in circulatory failure accompanying shock: (*a*) the reduction of peripheral resistance; and (*b*) the fall of effective venous pressure, decreasing the systolic discharge.

American Review of Tuberculosis, Baltimore

June, 1918, **2**, No. 4

12 *Medical Aspects of Framingham Community Health and Tuberculosis Demonstration. D. B. Armstrong.—p. 195.
13 Tuberculosis Survey of Residents of Saranac Lake, New York. F. B. Ames, Boston.—p. 207.
14 Tuberculosis Among Immigrants. W. L. Rathbun, Otisville, N. Y. —p. 237.

12. **Medical Aspects of Framingham Demonstration.**—The general death rate, corrected for nonresidents, has averaged 13.65 per thousand for the last ten years in Framingham (1906 to 1916). In 1917 the general death rate was 11.1 The infant mortality rate in Framingham for the previous ten year period was 81 per thousand born. In 1917 it was 73. The tuberculosis death rate, corrected for nonresidents and for errors in death certifications, averaged for 1906 to 1916 approximately 121.5 per hundred thousand. In 1917 the rate was 99.6. Armstrong says that the Framingham Community Health and Tuberculosis Demonstration aims to be not only an investigation and an experiment in community disease control; it should be also a demonstration of a community method, successful or not, as events prove, of disease prevention and health administration. The latter aspect especially will be of wide interest.

An accurate presentation of the findings of this social laboratory, is therefore of value. It may be that the *results* of the Framingham, experiment will be more important than the *result*. In any event, knowledge of the progress of the work may stimulate similar studies elsewhere. Thus far the health experiment has apparently demonstrated the importance of sympathetic cooperation from local and outside agencies, as a basis for community social control over disease producing factors. It is the hope and anticipation of the committee that further developments will demonstrate that on a community basis, disease may be prevented and health created, thereby laying a permanent physical foundation for future social economic and spiritual evolution.

Annals of Surgery, Philadelphia

June, 1918, **67**, No. 6

15 Congenital Variations in Peritoneal Relations of Ascending Colon, Cecum, Appendix and Terminal Ileum. S. C. Harvey.—p. 641.
16 *Multiple Myelomas and Their Ability to Metastasize. D. Symmers, New York.—p. 687.
17 Prognosis and Treatment of Empyema. J. Homans, Boston.—p. 697.
18 Treatment of Penetrating Gunshot Wounds of Chest with Hemorrhage into Pleura. L. W. Hotchkiss, New York.—p. 707.
19 *Relation of Gastric Ulcer to Cancer. J. Ewing, New York.—p. 715.
20 *Cautery Excision of Gastric Ulcer. D. C. Balfour, Rochester, Minn.—p. 725.
21 Relief of Umbilical Hernia by Condemin-Ransohoff Technic. H. B. Delatour, Brooklyn.—p. 732.
22 Congenital Idiopathic Dilatation of Colon or Hirschsprung's Disease. S. Graves, Louisville, Ky.—p. 734.
23 Mechanical Derangement of Knee Joint. M. S. Henderson, Rochester, Minn.—p. 738.

16. **Metastasis of Multiple Myelomas.**—Symmers says that his case and a case recorded by Christian represent the only really indisputable examples of genuine metastatic myeloma, effectually violating the generally accepted dictum that the myelomas do not metastasize by cell transplantation. His patient, a man, aged 51 years, was admitted to the hospital in a semicomatose state with the classical signs of cardiac decompensation. Eight years before the patient suffered a fall, striking the right shoulder. For a year thereafter the shoulder was more or less swollen and painful. For three months previous to admission the patient complained of rheumatic pains in the right shoulder, and finally lost the use of the arm entirely, but whether suddenly or not the history does not state. Physical examination showed marked enlargement of the heart and a double murmur at the base. The head of the right humerus was markedly enlarged and crepitation was felt. The urine revealed no Bence-Jones protein. The man died.

On the side of the head, about 3 cm. back of the external angle of the left eye, was a slightly elevated, circular growth which projected directly through the outer table of the skull and was delimited by a rim of bone. The skin over it was intact. The upper third of the right humerus was greatly enlarged and the bone was fractured. The medulla of this part of the humerus was occupied by a quantity of grayish red, soft tumor material. In the medulla of the third rib on the right side about an inch from the costochondral junction was a small, reddish nodule, soft in consistence, the hard bone on either side being intact. In the intercostal muscles between the sixth and seventh ribs on the right side was a mass of reddish tumor tissue, the ribs on either side being intact. Lying in the fat tissues immediately adjacent to the left suprarenal capsule was a soft reddish nodule which was rounded and measured 1.5 by 2 cm. The vertebrae were intact throughout.

Microscopic examination of the tumors in the humerus, in the third rib, in the intercostal muscles and in the fat around the suprarenal revealed growths composed, for the greater part, of rather large, rounded or polygonal cells, each of which enclosed an excentrically placed nucleus with a fine chromatic reticulum and coarser chromatic particles arranged at irregular intervals against the cell membrane. The cytoplasm was pale or slightly pinkish in color and smooth. Scattered among these cells, which were of the type usually described as myeloblasts, were fairly large numbers of cells whose nuclei presented slightly different structural characteristics in that the chromatic network was stippled with coarse granules, thus corresponding to the nuclei ordinarily encountered in the so-called plasma cell. In certain sections a third type of cell was found, likewise in fairly large numbers. These cells varied in size. Each was provided with a densely staining, small nucleus, often excentrically placed, and with very finely granular, reddish staining cytoplasm. They were evidently degeneration forms.

19. **Relation of Gastric Ulcer to Cancer.**—According to Ewing the cancerous transformation of peptic ulcer is rather infrequent and probably does not exceed the incidence of 5 per cent. originally established. This proportion would be much smaller if only those cases were included in which the evidence is demonstrative, namely, a long history of gastric ulcer, the limitation of the tumor to isolated foci or one portion only of the ulcer, and freedom of the base from infiltration.

20. **Cautery Excision of Gastric Ulcer.**—The low operative risk of cautery excision and gastro-enterostomy is shown by the fact that in the 186 cases in which this was the major operation there were two deaths, giving a mortality in the series of only 1 per cent. The necropsy findings in each of these two cases demonstrated that the field of operation was in perfect condition; the cause of death in one being pulmonary embolus on the eighth day and in the other pneumonia on the twentieth day. In comparing these statistics with those of knife excision and gastro-enterostomy Balfour finds that in the eighty-nine cases in which operation was done by this method three deaths occurred, a mortality of 3.3 per cent. The convalescence of the patients in whom cautery excision and gastro-enterostomy are done is uniformly smooth, and the clinical postoperative course bears out Carman's observation that better gastric motility is attained than in those operations (particularly excision of a V-shaped segment in the lesser curvature) which entail greater damage to the musculature of the stomach.

The reports of the late results are most favorable. Of the sixty-one cases in which the cautery was used in 1914-1915 Balfour has positive information in fifty-five. In this number there have been four deaths from all causes since operation, two already mentioned following operation, the other two of unknown causes at their homes in the three or four years after leaving the clinic. Of the remaining fifty-one cases operated on in the two years 80 per cent. of the patients report a satisfactory result (cured and greatly improved),

18 per cent. were improved in the sense of amelioration of symptoms present previous to operation, while in no instance did a patient report that he had not obtained relief from the operation. The cases of knife excision and gastro-enterostomy in this period show corresponding figures of 70 and 15 per cent., while 15 per cent. of the patients state they are no better. These figures of mortality and late results have more force when it is remembered that the knife excision cases are essentially selected, inasmuch as this operation is done only when conditions are favorable, while the cautery is often employed in the very case in which excision is unwarranted because of the size, fixity and situation of the ulcer.

The apparent advantages of the method may be summarized as follows: 1. The cautery efficiently destroys the focus of infection in gastric ulcer without the sacrifice of Nature's protective induration surrounding the ulcer crater. 2. It may be applied in a large percentage of gastric ulcers. 3. It entails a minimum of operative risks. 4. Clinical and roentgenologic evidence show better motility and function than follow knife excision and gastro-enterostomy. 5. It has a particular efficiency in obviating early and late postoperative hemorrhage. 6. The late results are better than those obtained with any other method. 7. It can be used in cases in which no other means of direct attack on the ulcer is justifiable. 8. It is probable that in gastric ulcer cautery, like knife excision, should always be combined with gastro-enterostomy.

Archives of Internal Medicine, Chicago

June, 1918, **21**, No. 6

24 *Renal Glycosuria. A. H. Beard and F. Grave, Minneapolis. —p. 705.
25 Salt Metabolism in Diabetes Mellitus. A. H. Beard, Minneapolis. —p. 716.
26 *Eggleston Method of Administering Digitalis. S. M. White and R. E. Morris, Minneapolis.—p. 740.
27 *Antigen-Antibody Balance in Lobar Pneumonia. F. G. Blake, Minneapolis.—p. 779.
28 *Brain Changes Associated with Pernicious Anemia. H. W. Woltman, Minneapolis.—p. 791.

24. **Renal Glycosuria.**—So-called renal diabetes has been reported at various times in the literature. The term is now recognized as a misnomer and the condition should be called renal glycosuria. True cases of renal glycosuria are rare and many so diagnosed are open to question, being mild or atypical diabetes mellitus. The lesion is apparently renal and due to a constant excretion by the kidney of a small amount of sugar while the blood sugar is normal. The tissues can still utilize carbohydrates, and as a result on any diet the percentage of sugar excreted does not vary to any great extent. The glycosuria is usually found by accident or routine examination, the patient reporting for life insurance or irrelevant illness. Most of the patients do not present any of the clinical symptoms of diabetes mellitus and are apparently in good health. Pathologically, the glycosuria seems to be due to a lowered kidney threshold for carbohydrates.

Beard and Grave report a case which on admission was thought to be one of atypical diabetes and the usual routine treatment was given in preparation for starvation, namely, the fats were first eliminated from the diet. After four days' starvation, glycosuria was still present and the blood sugar remained at the same level as on admission. A low caloric diet was next administered and starvation was later repeated. The glycosuria still persisted and the blood remained unchanged to any great extent. On account of this fact the dextrose-nitrogen ratio was determined. After a constant diet of protein and fat for six days, the glycosuria disappeared. The next few days, on starvation, glycosuria was absent, this being the only time during her stay in the hospital that the patient was sugar-free. It was thought the case might correspond to the usual diabetic treatment, but on a diet containing 7 gm. of carbohydrate the sugar output was 7 gm. The blood sugar still remained fairly constant. The diagnosis of renal glycosuria now seemed to be confirmed, and during the remainder of her stay in the hospital the patient was treated for this condition.

26. **Digitalis by Eggleston Method.**—White and Morris are of the opinion that the Eggleston method is a valuable addition in digitalis therapy, that it gives confidence in the use of the drug, and that the shorter time necessary for securing digitalis effects should give the method wide use. The method must be used with care to select cases in which these effects are desired. Cases of acute or chronic infections, with the probability of the presence of endocardial infections, should be given the method—if at all—only after careful study, because of the possibility of embolism and of associated myocardial changes predisposing to block. The Eggleston method, in cases of decompensation with auricular fibrillation, gives strikingly favorable results. The Eggleston method, with 3 or 4 c.c. or more of the tincture daily for several days, has resulted, once in partial and once in complete heart block.

27. **Antigen-Antibody Balance in Pneumonia.**—Blake found that there is a definite relation between the excretion of soluble pneumococcus antigen in the urine and the development of precipitins in the blood in lobar pneumonia. The development of agglutinins in the blood bears no definite relation to the excretion of soluble antigen in the urine. The curve of concentration of precipitins does not parallel the curve of concentration of agglutinins. Pneumococci disappear from the blood prior to or coincident with the appearance of agglutinins. The balance between antigen and antibody bears a definite relation to the course and outcome of lobar pneumonia, (*a*) in that cases developing an excess of precipitins and agglutinins have invariably recovered shortly after or coincident with the appearance of these antibodies; (*b*) in that cases showing a progressive increase in the excess of antigen without the development of demonstrable antibodies have invariably been fatal. Daily estimation of the concentration of soluble antigen excreted in the urine and of the number of pneumococci per cubic centimeter of blood have been of great prognostic value in the individual case.

28. **Brain Changes and Pernicious Anemia.**—Woltman examined the brains of seven persons who died of primary idiopathic pernicious anemia. The most salient features in the pathologic-anatomy of these brains, were the following: 1. Not only do degenerated areas of the Lichtheim type, such as are typically found in the posterior and lateral funiculi of the spinal cord in pernicious anemia patients, occur in the medullary portions of the brains of these cases, but they occur with about the same frequency, though their demonstration may be rendered more difficult. 2. Patients who show degenerative changes in the spinal cord at necropsy, usually show the same type of lesion in the brain also. 3. In addition to these focal degenerative areas found in the white matter, which may or may not be associated with blood vessels, one also finds a diffuse degeneration, which, though it is, as a rule, somewhat more striking in the long association tracts, also occurs in the short commissural fibers passing from one gyrus to another, thus rendering the view untenable that it is the distance of these fibers from their trophic centers which is instrumental in causing the degeneration. 4. The gray matter is by no means immune from the destructive process. This is usually focal in character, and begins around the pyramidal cells of the marginal gray layer, the cells themselves being ultimately destroyed in the process, this, in turn, giving rise to a secondary and very diffuse degeneration of the medullated fibers in the white matter. 5. Though some degeneration was noted in the fibers of the internal capsule and in the long tracts passing through the pons, the degeneration at this level was less intense than that seen either in the cord or in the brain. 6. The appearance of these plaques, not only around the blood vessels but also around some of the larger pyramidal cells, seems additional evidence that lymph stasis is an important factor in the production of these foci. 7. Well marked psychoses, such as are occasionally associated with pernicious anemia, probably have little or nothing to do with these destroyed areas. 8. The milder mental manifestations such as somnolence, apathy, and terminal delirium, are probably in a measure dependent on these lesions, though the chief causative agent of these symptoms is probably the toxin itself.

Arkansas Medical Society Journal, Little Rock

June, 1918, **15**, No. 1

29 War and Sanitation. R. Blue, Washington, D. C.—p. 4.

Boston Medical and Surgical Journal

June 27, 1918, **178**, No. 26

30 Get Lean and—Homely. G. Van Ness Dearborn, Cambridge. —p. 887.
31 Hearing Test Apparatus. J. Prenn, Boston.—p. 896.
32 Idiopathic Epilepsy a Sympathicopathy. E. A. Tracy, Boston.—p. 897.

July 4, 1918, **179**, No. 1

33 *Sugar in Its Relation to Infant Feeding. L. W. Hill, Boston. —p. 1.
34 Dental Diseases in Relation to Diseases of Nose and Throat. K. H. Thoma, Boston.—p. 17.

33. **Sugar in Its Relation to Infant Feeding.**—Sugar is necessary to life. The importance of sugar for fuel is shown in breast milk, of which 48.7 per cent. of the calories are furnished by the sugar. The feeding of large amounts of sugar may cause a rapid increase in weight, provided the sugar is well digested. The stools of a breast fed baby are normally quite strongly acid in reaction, due to the large amount of sugar and fat in breast milk. A baby takes relatively much more sugar than does an adult, and the assimilation limit is much higher in infancy than it is in later life. Two things are necessary for sugar fermentation; undigested sugar free in the intestine, and bacteria in sufficient quantity to attack it. Overfeeding with sugar, either given as too much food as a whole or as a too high sugar percentage, may cause fermentation. Overheating is of great importance in bringing about sugar fermentation. Infections of various sorts in other parts of the body than the digestive tract are important as a cause of sugar fermentation. Nervous exhaustion and excitement may also bring about sugar fermentation by suppressing the secretion of the intestinal juices, and possibly by increasing intestinal peristalsis, in which case time is not given for the proper digestion of the sugar in the small intestine, and it proceeds to the large intestine, where it ferments. As a last and important cause of sugar fermentation, constitutional weakness of the baby is to be considered. Inasmuch as lactose is the natural sugar which a baby gets in breast milk there is no reason for feeding normal babies on any other sort of sugar. Babies vary immensely in the amount of sugar that they can take. The usual rule is not to exceed 7 per cent. of sugar in the formula. Many cases of mild sugar fermentation may be controlled by simply diluting the food for a few days or by omitting all added sugar. The more severe cases will require further treatment; castor oil or calomel. Feed a low percentage of sugar; never let a baby with sugar fermentation get into a "dried out" condition.

In severe cases of sugar fermentation, when the breathing is of the hyperpneic type, alkali administration is advisable, as acidosis probably exists. Sodium bicarbonate is the best alkali to use, and should be given either by mouth or intravenously; 30 grains every two hours can be given to most babies. Soda should be pushed until the urine becomes alkaline. If the baby is unable to retain soda by mouth, which is very likely, it must be given intravenously. A 4 per cent. solution may be used, and, depending on the size of the baby, from 75 to 150 c.c. of this may be given. Intestinal irrigations with normal saline used at the beginning of the attack may be of considerable value in emptying the colon of toxic products. They have, however, little place in the latter treatment, and in most cases when used as a daily routine do more harm than good, by irritating and disturbing the child. In most cases of sugar fermentation drugs are of little value. Chalk mixture or bismuth may be given. Intestinal antiseptics, such as salol, calomel, etc., are of no value, and should not be given, as it is quite impossible to sterilize the intestine, or to influence its bacterial flora enough to amount to anything in this way.

Opium in some form, usually as paregoric, has a definite place in the treatment of some cases of sugar fermentation. It should never be given as a routine, but only when the watery diarrhea and tenesmus are so excessive as to exhaust the child. Stimulants may often be needed. The most valuable are caffein camphor in oil, epinephrin and brandy. Hill prefers caffein citrate, or caffein sodium benzoate, subcutaneously, given in rather large doses. The subcutaneous injection of 1 or 2 minims of a 1:1,000 epinephrin chlorid solution may be of service where there is circulatory collapse with very low blood pressure. Its action is, however, only fleeting. Briefly, the two most important things in the treatment of sugar fermentation are proper feeding, and plenty of water; most cases may be controlled by these alone, without the use of any other special methods of treatment.

Indiana State Medical Association Journal, Fort Wayne

May, 1918, **11**, No. 5

35 Public Health Work in Indiana. J. N. Hurty, Indianapolis. —p. 181.
36 Diagnosis of Heart Disease. G. W. McCaskey, Fort Wayne.—p. 187.
37 Step Forward in Use of Army Litter. G. B. Kent.—p. 191.

Kentucky Medical Journal, Bowling Green

July, 1918, **16**, No. 7

38 Skin Lesions Due to Focal Infection and Septicemia. M. L. Ravitch, Louisville.—p. 288.
39 Diagnosis and Treatment of Paresis by General Practitioner. G. P. Sprague, Lexington.—p. 290.
40 Diagnosis of Gallbladder Disease. A. W. Nickell, Louisville. —p. 292.
41 Brain Surgery. J. G. Sherrill, Louisville.—p. 298.
42 History and Present Status of Birth and Death Registration in Kentucky. P. E. Blackerby, Bowling Green.—p. 306.
43 Valvular Heart Disease. E. D. Turner, Cave City.—p. 307.
44 Smallpox; Report of Cases. E. L. Palmore, Hiseville.—p. 309.
45 Treatment of Chronic Conjunctivitis. R. H. Cowley, Berea. —p. 311.
46 Pneumonia. C. D. O'Hara, Williamstown.—p. 311.
47 Empyema. T. J. Marshall, Bardwell.—p. 313.
48 Fractures of Skull. W. W. Tarvin, Covington.—p. 314.
49 Extensive Burns of Body. J. F. Dunn, Arlington.—p. 316.
50 Malignant Ulcers of Cervix O. W. Brown, Lenoxburg.—p. 318.
51 Clinical History and Symptoms of Abdominal Tumors, Especially Ovarian Cysts; Report of Case. W. F. Gardner, Carrsville. —p. 320.

Medical Record, New York

July 6, 1918, **94**, No. 1

52 *Thoracic Surgery. S. J. Meltzer, New York.—p. 1.
53 Relation of Internal Secretions and Faulty Metabolism to Mental Perversions. B. C. Keister, Roanoke, Va.—p. 4.
54 Death and Its Semitic Traditions. J. H. Marcus, Atlantic City, N. J.—p. 7.
55 *Treatment with Digitalis Preparations. E. Zueblin, Cincinnati. —p. 13.
56 Vaccine Dosage in Elimination of Systemic Effects of Mouth Infections. J. Head, Philadelphia.—p. 17.

52. **Thoracic Surgery.**—Meltzer says that the most desirable object in thoracic surgery is the proper development of exploratory thoracotomy with the object of using it in the same manner and for the same purpose as exploratory laparotomies are used, that is, in the first place for making a proper diagnosis. He believes that in some conditions the exploratory incision in itself may even exert a therapeutic effect. On the other hand, Meltzer would rather counsel conservatism in the attempts to perform untried and unstudied methods of operation. Occasional success rapidly leads to repetitions and numerous failures, and this discredits thoracic surgery. Patient, practical, and experimental studies should be the means of paving the way to the final success in thoracic surgery. He also proposes that large intercostal incisions should be made for the treatment of pulmonary tuberculosis. If the procedure does not interfere with the respiration, that is, if it proves that the mediastinum sufficiently protects the respiratory activities of the lung in the opposite cavity, steps should be taken to keep the incision open for a longer period. If the lung of the opposite side is also affected, the same procedure should be followed out later when the first incision is healed. The idea underlying this suggestion has nothing in common with the method of treatment by means of insufflation of nitrogen in the pleural cavity. Meltzer's suggestion is stimulated by the experience of the curative effect of laparotomy on tuberculous peritonitis; the introduction of nitrogen or oxygen into the peritoneal cavity exerts no such curative action. Meltzer throws out the further hypothesis that the moderate distentions of the partly adherent exposed lung may rather prove to be a favorable factor in the possible therapeutic acton of a thoracotomy.

55. **Treatment with Digitalis Preparations.**—Zueblin's investigation has shown that the cardiovascular remedies are not constant in their physical properties; that they undergo changes as they become older, particularly as regards the ionization studied by means of the fontactoscope. It was found that notwithstanding a careful storage, excluding light and humidity, these changes take place. Furthermore, by exposing digitalis preparations to the action of high frequency waves, these drugs present a higher degree of ionization after such treatment.

Michigan State Medical Society Journal, Grand Rapids

July, 1918, **17,** No. 7

57 Surgical Conditions of Knee Joint. R. C. Andries, Detroit.—p. 291.
58 Relation of Medical Profession to Municipaly Controlled Medical School of Detroit. A. P. Biddle, Detroit.—p. 295.
59 Severed Right Femoral Artery. D. L. Stilwell, Detroit.—p. 296.

Minnesota Medicine, St. Paul

July, 1918, **1,** No. 7

60 Gastric Crises and Related Abdominal Pain. E. L. Tuohy, Duluth.—p. 241.
61 Fractures of Skull. R. Earl, St. Paul.—p. 247.
62 Lithiasis with Bilateral Renal Involvement. W. F. Braasch, Rochester.—p. 252.
63 Responsibilities of Medical Practitioner to State, Profession and Patient, as Related to Malpractice. A. F. Schmitt, Mankato. —p. 256.
64 Cesarean Section. H. T. McGuigan, Red Wing.—p. 262.

Missouri State Medical Association Journal, St. Louis

July, 1918, **15,** No. 7

65 Medical Aspects of War. R. E. Schlueter, St. Louis.—p. 243.
66 Responsibility of Medical Profession to Crippled Soldier. G. C. Robinson, St. Louis.—p. 250.

Modern Hospital, St. Louis

July, 1918, **11,** No. 1

67 Planning of Small Tuberculosis Sanatorium Buildings. J. D. Burt, New York.—p. 1.
68 Standardization of Hospitals for Insane. W. C. Sandy, Middletown, Conn.—p. 6.
69 Occupational Treatment in Nervous Disorders. J. Luther, Providence, R. I.—p. 11.
70 Hospital Housekeeping, Its Worries and Cares. M. A. Jamieson, Columbus, Ohio.—p. 15.
71 Self-Government for Resident Medical Staff. C. B. Bacon, New York.—p. 17.
72 Memorial Hall of Buffalo General Hospital. E. F. Stevens, Boston. —p. 20.
73 Little Journeys to Places and People Worth Knowing. M. J. Robinson, Chicago.—p. 23.
74 Hospitalism; Its Cause and Treatment. P. O. Clark, Wheeling, W. Va.—p. 53.
75 Standardization of Hospitals. C. A. Drew, Worcester, Mass. —p. 56.
76 Community Hospital as Viewed by Nurse. M. Harrison, Kerrville, Texas.—p. 58.
77 Visitors and Visiting in Hospitals. J. Geffen, Philadelphia.—p. 61.
78 Who Should Be Dispensary Patients? M. M. Davis, Jr., Boston, and A. R. Warner, Cleveland.—p. 64.

New Orleans Medical and Surgical Journal

July, 1918, **71,** No. 1

79 Thrift and War Savings Stamps and Liberty Bonds. C. Janvier, New Orleans.—p. 6.
80 Medical Reserve Corps. I. Dyer, New Orleans.—p. 11.
81 Medical Profession and Great War. H. Page, Fort Oglethorpe, Ga.—p. 14.
82 Medical Reserve Corps and Medical Military Activities. F. Simpson, Washington, D. C.—p. 19.
83 Bass-Watkins Agglutination Test for Typhoid. F. M. Johns, New Orleans.—p. 22.
84 Treatment of Eclampsia. H. E. Miller, New Orleans.—p. 28.
85 Importance of Early Diagnosis and Treatment of Middle Ear Diseases of Children. M. P. Boebinger, New Orleans.—p. 36.

New York Medical Journal

June 22, 1918, **107,** No. 25

86 Some Unusual Surgical Experiences. A. Vanderveer, Albany. —p. 1161.
87 Relation between Lupus Erythematosus and Tuberculosis. F. Wise, New York.—p. 1164.
88 Prognosis in Pulmonary Tuberculosis. M. Fishberg, New York. —p. 1167.
89 Diagnosis and Treatment of Anthrax. N. Schwartz, New York. —p. 1171.
90 Otogenous Temporal Abscess with Hemiplegia. O. Glogau, New York.—p. 1174.
91 Roentgen Ray as Diagnostic Aid in Backache. M. K. Fisher, Philadelphia.—p. 1176.
92 Plan for Prevention of Venereal Diseases in New York State. E. H. Marsh, New York.—p. 1178.
93 Occupational Mercury Poisoning. G. S. Bangert, East Orange, N. J.—p. 1179.
94 Treatment of Compound Fracture of Femur at Casualty Clearing Stations. H. M. W. Gray, Aberdeen, Scotland.—p. 1181.

July 6, 1918, **108,** No. 1

95 Device for Roentgen Ray Location of Bullets and other Foreign Bodies in Wounds. S. Tousey, New York.—p. 1.
96 *Unusual Hyperpyrexia in Pneumonia; Recovery. J. P. C. Griffith, Philadelphia.—p. 3.
97 Action of Radium on Cataract. I. Levin and M. Cohen, New York.—p. 4.
98 Case of Dyspituitarism. H. Climenko, New York.—p. 5.
99 Plaster of Paris Bandage Roller. W. H. Bennett, Atlantic City, N. J.—p. 6.
100 Mechanical Comminution of Food in Therapeusis of Acute Alimentary Disturbances of Infancy and Childhood. H. Lowenburg, Philadelphia.—p. 7.
101 Analytic View of Psychic Factor in Shock. G. M. Parker, New York.—p. 12. To be concluded.
102 Dispensary Abuse. I. S. Wile, New York.—p. 17.
103 Brief Biblical Evolution of Medicine. J. H. Marcus, Atlantic City, N. J.—p. 21.
104 Epidemiology of Trench Warfare. V. Bardou, France.—p. 24.

96. **Hyperpyrexia in Pneumonia.**—In a typical case of bronchopneumonia with increasing and finally rather extensive consolidation involving parts of both lungs in scattered areas, although the patient was evidently severely ill, the heart sounds throughout remained fairly good; the patient never appeared to be in any immediate danger, and a guardedly favorable prognosis was given at all times. The most interesting feature was the continued tendency to high fever, with a daily maximum of 104 to 107 F., and one occasion 108 F., with rapid drops to 100. The patient was 2½ years of age. The second case was at first an ordinary typical croupous pneumonia in a boy of 5¼ years. The temperature had been not unduly elevated, the mind entirely clear, the cardiac strength excellent. This favorable condition continued until the seventh day of the attack, when an unusual degree of drowsiness developed, and the temperature became higher. On the tenth day, instead of the convalescence which had been fully expected even earlier, the temperature began to rise, the pulse grew very weak, and the child appeared to be rapidly sinking. The fever had risen to 109 F., as recorded by two different thermometers. A warm mustard bath had been given, and the temperature had fallen to 106, yet with the pulse still rapid and no improvement in the general condition of the child, who was unconscious and evidently extremely ill. In twelve hours, however, the temperature had dropped nearly 12 F., and the general condition, although still very bad, was better. By the thirteenth day of the disease convalescence appeared established. There was no further return of fever.

Ohio State Medical Journal, Columbus

July, 1918, **14,** No. 7

105 Night Pay Clinic; Its Development at Lakeside Hospital. A. R. Warner, Cleveland.—p. 404.
106 Use of Nitrous Oxid in Production of Painless Childbirth. M. Salzer, Cincinnati.—p. 406.
107 Perforation of Abdominal Viscera. E. H. Chapin, Columbus. —p. 409.
108 Predisposing Cause of Cancer in Women. G. E. McCullough, Troy. —p. 411.
109 Certain Special Fractures. J. D. Smith, Akron.—p. 413.

Philippine Journal of Science, Manila

May, 1918, **13,** Sec. B, No. 3

110 Virulence of Certain Body Organs in Rinderpest. W. H. Boynton, Manila.—p. 127.
111 Use of Organ Extracts in Place of Virulent Blood in Immunization and Hyperimmunization Against Rinderpest. W. H. Boynton, Manila.—p. 151.
112 Comparative Study on Natural Hemolysins in Inactivated Human and Monkeys Serum. C. Monserrat.—p. 159.

South Carolina Medical Association Journal, Greenville

June, 1918, **14,** No. 6

113 Application of Military Sanitation in Small Towns and Rural Districts. F. L. Parker, Charleston.—p. 144.
114 Military Medicine and Surgery. G. A. Dillinger, Camp Hancock. —p. 147.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, London

April, 1918, **5**, No. 20

1 Surgical Pathology of Peripheral Nerves. S. M. Cone.—p. 524.
2 *Study of Series of Wounds Involving Brain and Its Enveloping Structures. H. Cushing.—p. 558.
3 Bone Growth and Bone Repair. I. A. Review. A. Keith.—p 685.
4 Two Cases of Strangulated Retroperitoneal Hernia into Pouches in Broad Ligament. C. H. Fagge.—p. 694.

2. See abstract in THE JOURNAL, April 6, 1918, p. 1038.

British Medical Journal, London

June 15, 1918, **1**, No. 2998

5 *Gunshot Wounds of Chest. J. F. Dobson.—p. 661.
6 War Scars and Their Pains. E. M. Corner.—p. 665.
7 *Emergency Treatment of Wounds. A. J. Hull.—p. 667.
8 Temporary Cecostomy in Resection of Distal Portion of Colon for Nonobstructive Conditions. G. Taylor.—p. 667.
9 Local Application of Liquid Glucose in Treatment of Certain Superficial Bacterial Infections. T. H. C. Benians.—p. 669.
10 *Intravenous Injection of Eusol in Chronic Arthritis. H. Fairclough.—p. 670.

5. **Gunshot Wounds of Chest.**—The recognition of penetrating wounds of the chest Dobson points out is not always easy, and the most careful examination of the chest should be made in wounds of the upper arm, neck, shoulder and lumbar regions. He cites cases to emphasize the danger of evacuating a case in which the chest has been primarily closed until such time as the possibility of infection has passed. The best preventive of sepsis is early and thorough operative treatment with complete closure of the chest. In some the infection is derived from the lung, and may not be prevented by primary operative treatment, however early and thorough. The results of drainage are undoubtedly bad. Many patients succumb to sepsis, despite a free and dependent opening. This is to be prevented by treating the infected pleura and lung as other infected wounds are treated, namely, by washing the whole of the infected area with an antiseptic fluid at regular intervals, the progressive sterilization of the wound previously described by the author combined with efficient drainage. The results of drainage and irrigation by this method are striking. The general condition of the patient improves rapidly. The amount of discharge is much lessened, and in many cases there is practically none. The lung expands quickly and undoubtedly much more rapidly than in cases treated by drainage alone.

7. **Emergency Treatment of Wounds.**—The ideal treatment for infected gunshot wounds, Hull says, is to excise them during the preinflammatory stage, that is, within twenty-four hours of the infliction. The exigencies of war will more often than not make this impossible. The question therefore arises whether it is possible to prolong the preinflammatory stage. The only treatment which a wound at present receives in war previous to being excised or otherwise dealt with at a casualty clearing station is the application of a first field dressing. In spite of the advances in surgery, particularly in the treatment of wounds, Hull states that the emergency treatment is no more efficacious than it was in the days of the Trojan wars. The dressings applied to wounds before the arrival at a casualty clearing station have no influence whatever on the infection in the depths of the wounds. Improved results of the treatment of wounds can only be achieved by some method of either excising the wound during the preinflammatory stage or by prolonging that stage, and research in the latter direction appears to be most desirable. The old first field dressing appears to be totally inadequate. It is suggested that, as soon as practicable after the infliction of a wound, it should be instilled with some nonirritating antiseptic, in order to inhibit the growth of micro-organisms. Within the first few hours, unless septic foreign matter remains in the depths of the wound, pathogenic organisms are found to be few in numbers and confined to the surface of the wound.

Several reagents which are nonirritating inhibitors of septic organisms are available. Flavine in 1:1,000 solution or dichloramin-T would appear to be suitable antiseptics for the purpose. Brilliant green is frequently used as an antiseptic stain. Eusol and Dakin solutions would be too evanescent and too transient in their action for this purpose, as, in fact, they are for any wound treatment during transport. If a 5 per cent. solution of salt be combined with the antiseptic reagent, the micro-organisms will not only be inhibited in the wound, but an outpouring stream of serum will be produced which will carry infection from the wound, and prevent the ingress of organisms. The technic of wound instillation is simple. The chosen solution is instilled by means of a fine glass nozzle attached to a Higginson's syringe, care being taken to inject fluid into the depths of the wound. This treatment is not beyond the scope of an advanced dressing station. There is also indication for the use of this method in casualty clearing stations. In times of pressure a patient may have to wait a day or more before an operation can be performed. The preliminary instillation of the wound with an inhibiting antiseptic solution may make the difference of the wound being operated on in the preinflammatory stage, or when suppuration has commenced. By beginning wound instillation within an hour or so a wound is bacteriologically as sterile as an excised wound, and but for the tissue necrosis which follows gunshot wounds the early instillation of a suitable antiseptic might replace wound excision.

10. **Injection of Eusol in Chronic Arthritis.**—The solution used by Fairclough contains 0.5 per cent. free hypochlorous acid, and was prepared according to the directions of James Graham, namely, 12.5 gm. boric acid, and 12.5 gm. chlorid of lime are shaken up with 1 liter water, allowed to stand for some hours, filtered, and 8.5 gm. of common salt added; dose, 100 c.cm. He reports good results.

Dublin Journal of Medical Science

June, 1918, **145**, No. 558

11 Rodent Ulcer. W. Beatty.—p. 329.
12 Syphilis and the State. T. P. C. Kirkpatrick.—p. 339.

Journal of Laryngology, Rhinology and Otology, London

June, 1918, **33**, No. 6

13 Paralysis of Left Vocal Cord. H. Tilley.—p. 161.
14 Intrinsic Cancer of Larynx and Operation of Laryngofissure. I. Moore.—p. 166. To be continued.

Journal of Tropical Medicine and Hygiene, London

June 15, 1918, **21**, No. 12

15 Classification of Mycetomas. A. J. Chalmers and R. G. Archibald.—p. 121.

Lancet, London

June 15, 1918, **1**, No. 4946

16 *Sterilization of Wounds by Physiologic Agency. A. E. Wright, A. Fleming and L. Colebrook.—p. 831.
17 *Method of Dealing with Divided Ureters. W. B. Bell.—p. 838.
18 *Warfare Injuries of Larynx. W. D. Harmer.—p. 839.
19 *Cecoplication. W. W. Cheyne and A. Edmunds.—p. 842.

16. **Sterilization of Wounds.**—Wright and his associates claim that (1) it has been erroneously inculcated that every wound should be sterilized before closure; and that, therefore, primary suture should be avoided and secondary suture undertaken only after a course of antiseptics. They state that there is now no question, with respect to primary suture, that the wound taken after early surgical cleansing and resection is as good as sterile; and, with regard to secondary suture, undertaken with a wound in good condition and a purely serophytic infection, that such operative procedure, provided it leaves behind no infected dead spaces, directly contributes to sterilization. (2) It has been taught that the authors should judge of the fitness of the wound for closure by necropyocultures and direct microscopic examination of the pus. According to the authors it would be infinitely more reasonable to base the judgments on the results of biopyoculture. (3) It has been taught that suture cannot be successful in a wound containing a hemolytic *Streptococcus pyogenes*. The authors found that leukocytes can, given proper conditions, successfully combat this, and of course all other streptococci; and that these conditions can be realized in connection with the suture of wounds. (4) It has been taught

that for the removal of sloughs from foul wounds chemical solvents are required. However, sloughs can be removed by tryptic ferment set free from disintegrated leukocytes, and the liberation of this ferment can be greatly accelerated by breaking down the leukocytes in the discharges with hypertonic saline solution. (5) Lastly, it has been taught in connection with antiseptics that sterilization is obtainable only by continuous or very frequently repeated application. According to Wright and his associates there is nothing to prevent any part of a wound surface which has been washed quite clear of albuminous matter being sterilized by a single application of antiseptics.

17. **Method of Dealing with Divided Ureters.**—When implantation into the bladder is impossible, or when that viscus is absent Bell procedes as follows: At the first operation laparotomy is performed through a central subumbilical incision. The anterior branch of the internal iliac artery is tied on either side to diminish the blood supply to the pelvic organs, and so to facilitate the subsequent procedures. Next, a loop of the lower ileum, about 18 inches in length, with its mesentery, is isolated, and an anastomosis is made to carry on the function of the intestinal tract from which the loop has been excised. The apex of the isolated piece of bowel is not superficially attached to the fundus of the bladder, and the two ends of the loop are brought out through stab wounds, in the iliac region on either side and fixed in position. The central incision in the parietes is then closed. The dressings over the open ends of the bowel should be changed frequently, as there is a good deal of discharge, especially from the distal end, for a few days. When the attachments at these orifices are quite firm swabs are taken from the interior of the bowel with precautions against superficial contamination. Subsequently the loop of the bowel is washed out twice daily with a 1:30 solution of Milton fluid. Within ten days the bowel is sterile or practically so. The irrigation is continued for a few days longer, at the end of which time, if all the cultures are negative, the next step is undertaken.

At this second operation a self-retaining catheter is first placed in the bladder, and, after the abdomen has been reopened, the apex of the loop of bowel is detached from the fundus of the bladder. The ureters in turn are divided at the pelvic brim and are implanted into the isolated loop in the manner described by Stiles. The whole pelvis is then cleared; the genitalia with the upper part of the vagina, the parametrial glands and connective tissue, together with a large diamond shaped piece of the base of the bladder—the largest area of which is situated over the front of the cervix—are removed. The aperture in the bladder is closed with two layers of continuous sutures. The apex of the isolated loop of the bowel in which the ureters have been implanted is now anastomosed with the fundus of the bladder. The self-retaining catheter should be utilized for a week to keep the bladder empty. The operation is completed by the closure of the abdominal wound and of the open ends of the isolated loop of intestine, unless it be judged advisable to keep one or both ends open for the purposes of lavage. In this case the openings are closed subsequently at a third operation. The main point emphasized by Bell is that a loop of bowel in the living human subject can quickly be rendered sterile and kept sterile.

18. **Warfare Injuries of Larynx.**—Investigations have been carried out by Harmer and others on 245 patients. It has been noted that wounds of the larynx are infinitely rarer than injuries to the jaws; that the entry wound may be situated in any part of the neck (jaw and chest rare) and is generally smaller than the exit injury; that the commonest place of entry is the anterior triangle of the neck, especially the region of the thyroid cartilage; that transverse wounds (61) are more common than oblique (24); that entry wounds in the middle line in front are very rare (8) and never occur posteriorly, doubtless because the spine is always involved with fatal results; that the track of the missile may be horizontal, from above downward or occasionally from below upward; that the lower jaw may be struck first; that injuries of the larynx between the level of the vocal cords and the cricoid are the most serious; that tracheal wounds are rare (12); that the pharynx or esophagus is often included; that extralaryngeal wounds are very common on account of the mobility of the air passages, the missile often passing obliquely by the side of the thyroid cartilage or transversely behind the larynx without penetrating into its cavity.

In many of the cases examined the classical symptoms were remarkable by their absence. Although missiles had undoubtedly perforated the air passages, the patients declared that very little trouble had been experienced. Cough, dyspnea, blood spitting, dysphagia, and, later, bruising, edema, or inflammation may never occur. In general, however, the voice is immediately lost. Cough supervenes for a time. Hemoptysis (twenty-five cases) is common and may be severe, statements being made by the patients that they had lost "at least 2 quarts of blood" after being wounded. Severe bleeding may be due to injury of the carotid arteries (3) or internal jugular vein (2). It may also originate from the mucosa of the air passages without injury to any large vessel. Hemorrhage may continue for a few minutes or for long periods, such as two to seven days. Recurrent and secondary hemorrhages are rare at the base. Dysphagia (twenty-nine cases) is common, but generally of a transient nature for a day or two, and is caused more often by general soreness of the tissues than by obstructive inflammation in the gullet. Even after severe wounds involving the food passages there may be no dysphagia. Thus, a bullet which passed through the pharynx behind the larynx is said to have caused no dyspnea, dysphagia, or hemoptysis. Dyspnea (28 cases, tracheotomy in 18) seems very variable, and is often absent even in severe wounds. It may, however, develop unexpectedly after apparently simple injuries and at almost any period.

In two thirds of the gunshot injuries of the larynx that survive for more than a week recovery is complete, and no ill effects are produced beyond alteration of the voice. A small proportion of the cases of abductor paralysis recover. In a small number of patients total paralysis supervenes. Although the majority of larynx wounds recover after a time, one third of the patients are less fortunate, and in battle many lives are undoubtedly lost owing to wounds of the neck and larynx. Even the survivors may be crippled by complications, such as paralysis of the brachial plexus, bronchitis, loss of voice, and injury to health. Harmer says that considering that the uniform of a soldier at the front includes a collar reaching to the jaw, it should be a simple matter to insert in it a band of steel which would have the same effect as a helmet.

19. **Cecoplication.**—In a patient with pain in the right iliac fossa occurring in attacks or as a dull ache, with tenderness at or near McBurney's spot, irregularity of the bowels, and vague digestive disturbances, the diagnosis of chronic appendicitis is usually made. Appendicectomy, in the large majority of cases, leads to relief of the symptoms and great improvement in the patient's general condition. There is, however, a residuum of cases in which this operation fails to relieve the patient, the pain continuing as before. Cheyne and Edmunds believe that the explanation of this in some of these cases may be, that the appendicitis was only part of a general colitis; in others, that some other organ, as, for example, the ovary or tube, kidney or ureter, was at fault. These symptoms are sometimes loosely diagnosed as due to adhesions. While adhesions may account for pain in this region if they obstruct the passage of the intestinal contents, this explanation will not meet the whole case. Many patients, for example, after a severe suppurating appendicitis, in whom it is certain adhesions are abundant, are perfectly confortable, while in other cases in which the symptoms have been attributed to adhesions laparotomy often proves that none are present. But even when all such sources of error are eliminated there is still a group of patients which present all the symptoms commonly ascribed to a chronic appendicitis, in spite of the fact that this organ has been removed. It is pretty generally recognized that in such cases there exists some affection of the cecum, which is usually found to be voluminous and abnormally mobile. This condition has been called by a variety of names, such as cecum mobile, typhlatony, typhlectasis and voluminous cecum. Many sur-

geons have come to the conclusion that this prolapse and mobility of the cecum are the cause of the train of symptoms mentioned above, and that the size of the lumen should be diminished by "cecoplication," that is, by sewing together the anterior and posterior bands.

When, therefore, a case of chronic appendicitis exhibits a long lax cecum it is a good plan to combine cecoplication with appendicectomy. This adds practically nothing to the risk of the operation, and the postoperative discomforts of the patient are, if anything, diminished, so that there need be no hesitation in performing it in any case. Cheyne and Edmunds commence the suture where the stump of the appendix is invaginated, using a fine catgut. The needle is passed through the adjacent edges of the anterior and posterior bands, which converge at this point, and these edges of the bands are then united by a continuous suture extending upward for 3 or 4 inches toward the hepatic flexure. If there is any tendency of the bowel wall to bulge over the end of the suture line, this can be counteracted by picking up the bowel wall, between the bands, in the last stitch. The suture is then reversed and carried downward toward its starting point, this time, however, picking up the edges of the bands which were originally farthest from each other, the suture is continued until the starting point is again reached. In this way the whole of the bowel wall between the bands is invaginated and held in place by union between the surfaces of the bands which have been sutured face to face.

Medical Journal of Australia, Sydney

May 25, 1918, **1**, No. 21

20 Syphilis. L. E. Ellis.—p. 427.
21 Results Obtained from Examination of Eight Thousand Mental Patients by Bordet-Wassermann Test. O. Latham.—p. 429.
22 Pathology in Wartime. A. H. Tebbutt.—p. 433.
23 Agglutination after Administration of Typhoid and Paratyphoid Vaccines. W. K. Inglis.—p. 434. To be continued.

June 1, 1918, **1**, No. 22

24 Id. W. K. Inglis.—p. 449.
25 Fifty Cases of Rectal Ether Anesthesia. H. W. Sweetnam.—p. 452.

Archives de Médecine et de Pharmacie Militaires, Paris

March, 1918, **79**, No. 3

26 *Transfusion of Citrated Blood. G. Giraud.—p. 369.
27 *Tourniquet Gangrene. Bertein.—p. 394.
28 *Traumatic Shock. A. Monéry and P. Lombard.—p. 401.
29 Pathogenesis of Gas Gangrene. A. and J. Chalier.—p. 415.
30 Causticity of Hypochlorite Solutions. W. Mestrezat.—p. 429.
31 General Paralysis as Invaliding from Service. A. Paris.—p. 434.
32 *Pignet's Index of Physical Fitness. Besson.—p. 438.
33 The Work of the Medical Department in the Cantonments. (Vue d'ensemble sur le service de santé dans les dépôts des corps de troupe.) L. Netter.—p. 455.

26. **Hematologic Study of Transfusion of Citrated Blood.**—Giraud examined the blood of both donor and receptor both before and after the transfusion, and compares his findings with those that have been reported by others in respect to hemoglobin, coagulability, hemolysis, agglutination and anaphylaxis. He has had no experience with anaphylaxis, but cites the case reported by Jeanbrau last year in which a wounded man who had been given antitetanus serum three weeks before had blood transfused from a man who had been given an injection of antitetanus serum that very morning. The transfusion was followed at once by white syncope on the part of the receptor, mydriasis and rigor, with death in a few seconds. The assumption of anaphylaxis from the antitetanus serum and the antitetanus serum in the blood of the donor seems the only explanation of this occurrence. On the whole, Giraud remarks, his research seems to have raised a number of questions without settling any.

27. **First Aid Treatment of Hemorrhage.**—Bertein insists that the tourniquet is far from being the only means to arrest hemorrhage. To begin with, he says, few with external hemorrhage from a large artery survive to reach the first aid station. Under other conditions he advocates applying a bandage around the limb with a roll of gauze, or any foreign body equivalent, over the artery itself. The bandage is drawn tight enough to ensure that this large roll of gauze interrupts the circulation in the artery under it, but this does not interfere with the circulation in the rest of the limb. If the limb is so crushed that most of it has been detached, it is better to amputate it at once and apply hemostasis to the stump. To tampon the stump effectually takes scarcely any more time than to apply the tourniquet.

28. **Traumatic Shock.**—Monéry and Lombard declare that the study of the blood pressure is the only means for appreciation of the degree, the gravity, of traumatic shock. The blood pressure cannot be estimated with the finger, but with the Pachon oscillometer the exact state of the circulation can be told with precision. There is a point below which it is impossible for the heart to recuperate, that is, below 4 for the minimal and 7 for the maximal pressure as shown by the oscillometer. Any operative intervention merely hastens death. With shock from hemorrhage, the limit is not so absolute as with traumatic shock. The latter is more frequent during offensives than during quiet periods, and the association of injury of bones and of a large trunk nerve seems to predispose most to traumatic shock. The arterial hypotension and hypotension of the eyeballs are the essential elements for its diagnosis. In treatment, they lay great stress on having the *shockés* assembled in the quietest available quarters, kept darkened, the beds the most comfortable possible, and the men undressed and isolated, with a personnel trained in care of traumatic shock. The darkness, quiet and silence are important aids, supplemented by heating the bed with a cradle heated by electricity or an alcohol lamp, the arterial pressure taken every hour with the oscillometer. Morphin is given systematically as this seems effectual in raising the arterial pressure in traumatic shock just as it prevents its fall during abdominal operations. Subcutaneous injections of saline, with epinephrin, complete the treatment, and the man sleeps. When the blood pressure has risen to 4 and 7 or 8, then the operation is to be considered, and they emphasize that experience is confirming the justness of Crile's views in regard to the necessity for local as well as general anesthesia. The region to be operated on must be thoroughly blocked with the local anesthetic, having the trunk nerve, the vessel sheaths and the periosteum actually swimming in the anesthetic. They give an illustration of the wooden sheath to protect the alcohol lamp and chimney for heating the cradle which they have found useful, as it protects against danger of fire while it enables the heat to be regulated and kept at a constant figure with the minimum of alcohol.

32. **Pignet's Index of Physical Fitness for Service.**—Besson remarks that this *coefficient de robusticité* must be regarded as only one element in deciding as to the candidate's fitness, but that it is proving a most valuable aid. The figures representing the weight and the chest measure (metric system) are added together and the sum is subtracted from the height in centimeters. For example, the candidate weighs 60 (kg.) and his chest measure is 90 (cm.). The sum of these figures —150—is subtracted from his height, which is 170 (cm.), leaving 20, which is the index in this case. This index is applicable only to the young. After the growth has been solidly attained, it does not represent to the same extent the physical fitness. The higher the index the less the fitness. Above 25 the question of fitness is dubious, and 35 or over should entail the rejection of the candidate unless he is exceptionally short, which calls for some modification of the formula. The index is useful also as a means of keeping oversight of the physical condition of young recruits in the service; any notable increase in the index should attract the medical officer's attention.

Bulletin de l'Académie de Médecine, Paris

May 28, 1918, **79**, No. 21

34 Sialophagia of Central Origin. G. Hayem.—p. 400.
35 *Leishman Cirrhosis of Liver. L. Nattan-Larrier.—p. 402.
36 *Traumatic Shock. Brechot and Claret.—p. 404.
37 *Acetonemic Syndrome in Children. A. Rémond and Poux. —p. 405.
38 *War Fractures. P. Reynier.—p. 409.

35. **Leishman Cirrhosis of Liver.**—Nattan-Larrier has seen cirrhosis of the liver develop with chronic kala-azar in India.

36. **Traumatic Shock.**—As an aid in prognosis, Brechot and Claret mention that of seven wounded men with intense shock, but with a variation of 3 or more between the maximal

and minimal tension with the Pachon oscillometer, six of the men recovered and the other succumbed to other causes. In another corresponding group with a variation of only 2.5 or less, only one recovered, and this was the one with the highest figure. A difference of 2.5 or more seems thus to be a favorable sign while below 2.5 the patient seems to be doomed. The lowering of the arterial tension seems to be a constant phenomenon in shock; it is due to a vasomotor paralysis, and this is responsible also probably for the rise in pressure in the cerebrospinal fluid which they found constantly in seven cases of severe pure shock.

37. **Acetonemic Syndrome in Children.**—Rémond and Poux assert that the disturbances in children known as periodical vomiting with acetonemia are only one form of the acetonemia-acidosis syndrome. In other forms the acetonemia may be associated with symptoms simulating meningitis, typhoid or jaundice. The liver, small intestine and pancreas bore the brunt of the attack, and the reaction in other organs imparted great variety to the clinical picture in their twenty cases. The syndrome may prove fatal, but they found that the symptoms, no matter how menacing, promptly subsided under treatment of the defective peristalsis by subcutaneous injection of pancreatic juice (total extract of the fresh gland), with sodium bicarbonate to combat the acidosis. In one exceptionally grave case in a girl of 8 they injected a 1 per cent. solution by the vein. In the other cases they gave from 20 to 60 gm. in the twenty-four hours by the mouth and bowel (drip method). Their success justifies the conclusion that acetonemia from insufficiency of the pancreas is a much more important element in the pathology of children than has hitherto been realized. Search for acetone should be a routine procedure in the first hours of sickness of an intestinal or nervous form in children. This acetonemia syndrome displays a marked tendency to recurrence. It should be warded off by abstention from cooked fats and too much meat, while an alkaline drinking water should be systematically used. A course of treatment at Vichy seemed very effectual. The first sign of trouble is the arrest of peristalsis. No feces are passed along from the small into the large intestine. The stools consist exclusively of the mucous secretions of the colon. Within five or six hours, acetone and diacetic acid appear in the urine, and by the twenty-fourth or forty-eighth hour the breath smells of acetone. The acetone and diacetic acid content of the urine may increase from about 0.10 gm. the first day to 4 or 5 gm. per liter in forty-eight hours, and the urine grows scanty and may look greenish. Thirst is great, and vomiting may occur, but there was no vomiting in 50 per cent. of their cases. The temperature may drop; one child had a rectal temperature of only 35 C. In others there was high fever.

38. **Treatment of War Fractures.**—Reynier devotes seventeen pages to a profusely illustrated description of the various apparatus to correct functional impotence devised, he says, by the inventive genius of Miss Gassette, technical director of the Franco-American Committee, whose training as an artist facilitated the task. He pays high tribute to her skill in inventing and modifying apparatus for suspension, extension, etc., and describes the principles so that others can apply them. He speaks with deep gratitude of her work and the American generosity which financed the whole, saying, *"Au nom de tous nos blessés, merci."*

Bulletins de la Société Médicale des Hôpitaux, Paris

April 26, 1918, **42**, No. 14

39 Lethargic Encephalitis in England. A. Netter.—p. 384.
40 *Convergence of the Eyeballs after Shell Concussion. P. Descomps, J. Euzière and P. Merle.—p. 385.
41 *Syndrome of Jugular Foramen. Rimbaud and Vernet.—p. 389.
42 Rotating Table for Roentgen Work. Lorgnier.—p. 393.
43 The Oscillometer Curve of the Pulse. J. A. Barré.—p. 397.
44 *Fixation of Complement in Skin Diseases. Desaux and Roehrich. —p. 402.

40. **Convergence of Eyeballs After Shell Concussion.**—At one of the army *centres de neurologie* it was noticed that the eyeballs were found intensely converging after the rotation test, and from ten to ninety seconds elapsed after the close of the test before the eyes resumed their normal position. In the nine cases described here, in four this convergence of the eyeballs was the only sign of anything wrong in the oculomotor sphere, but in the other five cases there was paresis of some of the neuromuscular apparatus of the eyes. The writers of the report regard the convergence as the equivalent of paralysis, and theorize to explain its mechanism, saying that it is a mistake to think that all the symptoms elicited by the rotation tests are referable to the internal ear. All these men were *commotionés*, and some had traces of evident organic central lesions from the shell concussion. The probability is, they think, that this convergence sign is a manifestation of some minute focal lesion in the brain.

41. **Pneumogastric and Spinal Nerves Syndrome.**—As these nerves emerge together through the jugular foramen, an injury at this point is liable to damage them all, and the resulting complicated set of symptoms has been called the syndrome of the jugular foramen. A typical case is described and the numerous causes liable to injure this vulnerable region are enumerated. Hypertrophied glands are one of the most frequent causes of compression of the set of nerves at this point. It is easy to differentiate the syndrome by the characteristic paralysis of the superior constrictor of the pharynx, evident when the tongue is held down with the spatula. In phonation, the mucosa of the posterior wall of the pharynx is drawn toward the sound side like a curtain. This objective symptom should be sought whenever there is complaint that swallowing of solid food is difficult. The paralysis may be so complete that swallowing is so difficult that stenosis of the esophagus may be assumed. In the typical case described the young man bent and twisted his head toward the side affected, to help in swallowing. His disturbances had followed a shrapnel wound in this region but there did not seem to be any direct injury of these nerves. Compression from a hematoma seems more probable.

44. **Fixation of Complement in Certain Dermatoses.**—The Wassermann reaction was positive in some cases of various types of skin disease but analyses of the cases showed that the skin disease was connected with the ingestion of meat. It was also determined that the antibody giving the reaction was present much more abundantly in the stools than in the blood serum. The reaction was very faint with the serum while very pronounced with the extract of the stools. This confirmed the other findings which incriminated the ingestion of beef as the predominant etiologic phenomenon. Otherwise the blunder would have been made to ascribe to syphilis the positive fixation of complement.

Journal de Médecine de Bordeaux

May, 1918, **89**, No. 5

45 *Transfusion of Blood. J. Guyot.—p. 119.
46 Welfare Work for Children in Combating Depopulation of France. Chambrelent.—p. 124.
47 Sterilization with Hot Vapors of Formaldehyd. E. Rousseau. —p. 130.
48 Can Saliva be Used in Treatment of Wounds? Grevin.—p. 140.

45. **Transfusion of Blood.**—Guyot lauds the Jeanbrau-Hédon method of transfusion of citrated venous blood. Three inspirations transform the venous blood into oxygenated blood, and sodium citrate is not an aphysiologic substance, as it is found in breast milk. Only the exact amount of blood required need be drawn from the donor. In the emergency cases requiring immediate transfusion there is no time to apply the Wassermann test and test for hemolysis to the donor, but in Jeanbrau's experience no mishaps have resulted except that in one case malaria was transmitted to the wounded man. Jeanbrau does not like to use for donor a man who has recently been injected with antitetanus serum, fearing to induce phenomena of anaphylaxis in the receptor; he had a rapidly fatal case of this kind last year. R. Monod's recent research has confirmed that transfusion of blood actively stimulates the blood-producing function. He cites David and Curtiss' experience with dogs almost completely drained of their blood. One lot were given saline infusions, the other blood transfusion. The immediate effects were identical in all, but by the end of the eighteenth hour 70 per cent. of the saline dogs had died, and only 6 per cent. of those given the transfusion of blood.

Journal de Radiologie et d'Electrologie, Paris

January-February, 1918, **3**, No. 1

49 *M Unit in Roentgen Work. H. Guilleminot.—p. 1.
50 Dissociation in Radial Paralysis. P. Charpy.—p. 9.
51 *Sign of Penetrating Wound of Heart. Costantini, Vigot and Gosselin.—p. 12.
52 *Electric Treatment of Tuberculous Ulcer. Bonnefoy.—p. 14.
53 *Transactions of the Réunions des radiologistes.—p. 18.

49. **Dosage in Roentgen Work.**—Guilleminot describes a new unit of intensity, M, which represents certain factors disregarded in the present units in use. He also gives a table of calculations for ready reference showing the effectual dose under different conditions.

51. **Immobility of Heart Shadow as Sign of Penetrating Wound.**—When the outline of the shadow of the heart persists immovable after a wound of the chest, it can be confidently assumed that the heart itself has been directly wounded. In two of the three cases described the immobility was absolute; it seemed as if the heart had stopped beating. In the other case there was slight undulation at one point, but the immobility of the rest of the heart gave the indication for the operation. It revealed a scrap of shell in the heart wall in each case.

52. **Electric Treatment of Tuberculous Ulcer.**—The large ulceration on the neck of the young woman had begun during her first pregnancy. It extended from the front of the neck to back of the ear, and proved resistant to all treatment, including heliotherapy. As a last resort it was submitted to daily application of the high frequency current, a total of 191 sittings in the course of about eight months, with final complete healing and no disfigurement except what could be covered with a collar.

53. **Work of the Army Radiologists.**—The government has arranged for monthly meetings of the radiologists in each army, in each military region, and the *Journal de Radiologie* is to publish the transactions. Thirty pages are devoted to this department in this issue, many roentgenologists relating their experiences, their innovations and their modifications of established instruments and methods. Twenty-three different communications are reproduced or summarized.

Lyon Médical

May, 1918, **127**, No. 5

54 *War Bread. R. Lépine.—p. 193.
55 *Prophylaxis of Tuberculosis. Mouisset.—p. 200.
56 *Chronic Spondylitis with Tendency to Ankylosis. Péhu and Daguet.—p. 206.
57 Dosage in Radium Treatment. T. Nogier.—p. 217.

54. **War Bread.**—Lépine has been making a special study of the gluten content and other features of war bread, and he asserts that it is impossible to make good bread with more than 20 or 25 per cent. of flours other than wheat flour. It is the gluten in wheat flour that makes the dough rise, and other flours do not yield gluten. Whatever flours are used, the proportion of the bran should be reduced to the minimum, but some means should be found for extracting from the bran the substances capable of being assimilated, and these substances should be added to the bread. The bran renders the dough more acid, possibly by its diastases or microbes, and this extra acidity checks the activity of the yeast cells, besides detracting from the palatability of the bread. This is the reason why Lapicque and Legendre advise the use of lime water instead of ordinary water. With this, light bread can be made even with flour bolted at 85. Their theory has been combated by some, but experience seems to be confirming the advantage of using lime water, although the practice is still open to discussion. The extra acidity when there is large admixture of bran alters the gluten even when the acidity is neutralized with the lime water. In conclusion Lépine urges practical study on a large scale of Pointe's method of making bread directly from the grain. The wheat is macerated for twelve or fifteen hours, in tepid water, and is then crushed into a paste which is passed through a wire sieve to exclude the bran. The paste is then ready to make the bread dough.

55. **Prophylaxis of Tuberculosis.**—Among the practical suggestions offered by Mouisset is that closer cooperation between the various public health agencies would materially improve the outlook. Energy is wasted in overlapping, and many fields are left neglected. He urges that anemic older girls and pregnant women should be regarded from the standpoint of official prophylaxis of tuberculosis. Anemic girls and frail children should be sent to the country; children with bone and joint tuberculosis should be given a chance for repose in country air. These alone may cure without the seashore, the mountains or other therapeutic elements. Specific institutions founded by gifts or legacies in rural districts or in towns often fail in their purpose because it is not realized that old people are not contented unless they are near their friends, while country surroundings are indispensable for the young with tuberculous lesions.

56. **Chronic Spondylosis with Ankylosis.**—Péhu and Daguet have encountered within a year ten cases of this kind in soldiers, and they are convinced that many cases reported by others as persisting lumbago, rheumatism, or sciatica, in reality are various phases of spondylosis with tendency to ankylosis. In their ten cases the men were about 40 years old, free from clinical signs of tuberculosis and gonorrhea. The first symptom is pain, at first in the lumbar sacral region. The pains keep up for a time, usually several months, and then subside for a time to reappear later and gradually extend the length of the spine. The rachialgia declines as ankylosis becomes installed. Roentgen examination shows a constant ligamentitis; the ligament becomes infiltrated with calcium salts. The chronic spondylosis seems to start always in the upper lumbar region or lumbodorsal. The lime deposits in the lateral ligaments cast a shadow resembling a hook or beak, but the vertebrae themselves show no essential modifications.

Paris Médical

June 1, 1918, **8**, No. 22

58 *Shock in the Wounded. F. Masmonteil.—p. 419.
59 *Plastic Operations on Urethra. F. Legueu.—p. 423.
60 *Discontinuous General Anesthesia. H. Chaput.—p. 427.
61 *Vocational Reeducation of the Wounded. G. Anceau.—p. 431.
62 Cancer of the Breast. Potherat.—p. 436.
63 Prostheses after Disarticulation of the Shoulder. A. Tréves.—p. 441; Ditto for Paralysis of External Popliteal. L. Lamy.—p. 443.

58. **Shock in the Wounded.**—Masmonteil's general review of this subject confirms that the pathogenesis of shock varies in different cases, and treatment can be only symptomatic, practically empiric. Until recently it was taken as a matter of course that the operation must be deferred until the patient has recovered from shock. But this doctrine has been much battered of late, and several varieties of shock are now disregarded. In shock from hemorrhage, the vessels must be ligated. In shock from toxemia or septicemia, the focus for the intoxication must be suppressed without delay by amputation of a crushed limb or excision of muscles; if the condition is too grave for this, the wound can be sprayed or injected with Mencière's fluid or a formaldehyd solution. In nervous shock, usually with multiple wounds and concussion, intervention is not needed so much at once. If an operation is done in shock, it must be as rapid as possible (not more than three or four minutes for amputation of the thigh). The intoxication from the anesthesia must be reduced to the practicable minimum; at the same time it must be remembered that the anesthesia must be complete, as pain aggravates the state of shock. Early intervention is thus very promising, and the results are more brilliant, he says, the shorter the interval since the wound.

59. **Rebuilding the Urethra.**—Legueu has now a record of three cases in which he made a permeable passage after a war wound of the urethra. The success was complete in two cases and fair in the others. He obtained the mucosa for the purpose from female patients requiring colpoperineorrhaphy. The strip of mucosa was wound around a bougie, the raw surface outside, and was held in place with fine silk, the needles being those used for suturing blood vessels. It was introduced into a tunnel bored for it in the subcutaneous cellular tissue. The mucosa tube is introduced into the cannula after withdrawal of the trocar with which the tunnel was made. If the diameter of the cannula is too small, the

latter is withdrawn and the bougie in the mucosa tube is pushed into the tunnel. The dilatation of the new urethra is commenced the seventh or eighth day. No retention catheter should be used as this, being a foreign body, is irritating.

60. **Interrupted General Anesthesia.**—See Paris Letter.

61. **The Rehabilitation Centers.**—Each center for rehabilitation of maimed and of disabled soldiers consists of the service for making and fitting artificial limbs, etc., the service for physiotherapy, and the service for vocational training. Anceau describes the workings of the whole system. The men are not sent to the rehabilitation centers until entirely healed of their wound. Workers in plaster, iron, wood, cork and leather all do their part in the manufacture of the prostheses. Eight illustrations show the application to numerous types of artificial feet, legs and arms of the main mechanical principles involved in each form of deformity.

Presse Médicale, Paris

May 16, 1918, **26,** No. 28

64 *Sequels of Skull Wounds. A. Pitres and L. Marchand.—p. 253.
65 Continuous Extension and the Cast. H. Mayet.—p. 255.
66 *Gonorrhea in Women. P. Chevallier.—p. 256.

June 6, 1918, **26,** No. 31

67 *War Dyspepsias. G. Mouriquand and L. Bouchut.—p. 281.
68 Absorption of Air by Serous Membranes. P. E. Weil and Loiseleur.—p. 283.
69 Bacteriologic Diagnosis of Tuberculosis. F. Dumarest.—p. 283.

64. **Subjective Sequels of Skull and Brain Wounds.**—Pitres has examined 470 men who had apparently recovered from their skull wounds, but all had had at some time or still have headache, vertigo, physical and psychic depression and inability to stand noise, a true *syndrome commotionel.* Some of the men presented this syndrome up to twenty-two or thirty months after their injury, but this long duration is rare. As a rule these subjective symptoms disappear almost entirely by the end of a year, but even then the men are extremely sensitive to noises and to any work that requires stooping over. Marie has warned that such men should never be utilized as aviators or drivers of automobiles. Repose is the main thing in treatment, rest of body and mind. Daily tepid douches and phosphated or arsenical medication seemed to benefit in his experience. Many men apparently cured and resuming active service have had to be sent back from the front, as they were unable to stand the noise of the big guns.

66. **Gonorrhea in Women.**—Chevallier gives minute directions for treatment of acute, prechronic and chronic cases in which the cooperation of the patient cannot be relied on. Tincture of iodin and silver nitrate solutions are the physician's weapons, while the patient is given potassium permanganate and a nightly ovule of ichthyol, to use herself.

67. **War Dyspepsias.**—In 200 cases of dyspepsia among the soldiers, 110 were of the type with flatulence while in the others pain or vomiting predominated in the clinical picture. All were young and most of them had been previously robust. The great majority were from rural districts, and the change from their former tranquil life, plus homesickness, had evidently been important factors in their digestive disturbances. There were few city men in these war dyspepsia cases. Emotional factors, defective teeth, and debility from wounds or gastroenteritis likewise cooperate, but the nervous element is the predominant note. The roentgen findings are normal as also the chemistry of the stomach. These details should be plainly stated on a card which should accompany the man, giving the diagnosis and the decision as to the true nature of the disturbances, which are practically hysteria of the stomach. The infirmary and hospital doctors would thus know how to manage the case when the man returns. The medical officers, once sure of the diagnosis, can aid the men in recovering their nervous and mental poise and soon make of them vigorous and excellent soldiers, instead of their dragging from hospital to hospital with their interminable complaints of dyspepsia. If it is allowed to last too long it becomes inveterate, and the men are absolutely unfit for service except possibly limited service. When too much debilitated for this, dismissal from the army may be the only means to cure them of their gastric "sinistrosis."

Progrès Médical, Paris

May 18, 1918, **33,** No. 20

70 *Choleriform Gastro-Enteritis. C. Lesieur and P. Jacquet.—p. 173.
71 *Frequency of Vincent's Angina. J. Chalier.—p. 174.
72 *Face Mask in Prophylaxis. A. Bernard.—p. 175.
73 A Doctor Captain. P. Voivenel.—p. 176.

70. **Choleriform Gastro-Enteritis Simulating Poisoning.**—In the case described the man of 43 was brought to the hospital in an algid condition, cold, with cyanosis of the extremities, the radial pulse imperceptible, intense pains in the stomach region and cramps. These symptoms developed suddenly in the night after a farewell dinner. They were ushered in with bloody vomit and profuse serous diarrhea. He improved immediately after intravenous infusion of saline, but died in collapse eleven hours after the first symptoms. The urine had been examined two months before and only 1.5 gm. urea found per day and liter. This with the known abuse of alcohol and the necropsy findings explained the case as the result of extreme fatty degeneration of the liver. The precarious balance had been upset by the excess at table superposed on a subacute proteus infection of the bowel. In a second similar case, the man died in a house of prostitution and the large amount of alcohol found in the stomach was probably responsible for the fatal upset.

71. **Prevalence of Vincent's Angina.**—Chalier warns that ulceromembranous sore throat is growing more common among the troops at the front. In the last twenty-two months he has encountered it in 26 per cent. of the forty-six cases of infectious sore throat necessitating hospital treatment, among the 2,500 men that have passed through his service. He insists on relative isolation of the men whenever Vincent's angina is suspected. When treatment can be begun early, the cure is usually complete in from eight to twelve days. He has found particularly useful extensive washing out of the throat, using for the purpose 2 quarts of boiled water to which a little hydrogen peroxid has been added, repeating the procedure three times a day. After these lavages he applies methylene blue copiously, in powdered form, filling the ulcer craters with it.

72. **Gauze Mask in Prophylaxis.**—Bernard comments that the use of netting over the beds, glass cubicles, etc., fails to do away with the vulnerable point of the nasopharyngeal secretions of the attending personnel. With this, infection may be spread from bed to bed and elsewhere. He cites Weaver's article in THE JOURNAL, Jan. 12, 1918, relating experiences with face masks, as a great advance. It promises to protect the attending personnel against becoming carriers or contracting the diseases they are tending, but many observations will have to be made before the exact value of the gauze mask in the prophylaxis of contagious diseases can be definitely determined.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 25, 1918, **48,** No. 21

74 Semicentennial of Obstetric-Gynecologic Clinic at Basel. A. Labhardt.—p. 673.
75 *Biology of Pregnancy Toxicoses. P. Hüssy.—p. 691.
76 *Uterine Cancer at Basel F. Egli.—p. 699.
77 *Pregnancy Anemia. M. Weidenmann.—p. 702.
78 *Torsion of Tubal Fibroma. Herde.—p. 706.

75. **Pregnancy Toxicoses.**—Hüssy has been making a comparative study of the serum of normal women, pregnant and nonpregnant, and of women with severe pregnancy toxicoses. He tested them in particular on the surviving rabbit ear, as he shows in an illustration. A glass tube is introduced into the artery and another into the vein of the ear and the serum in question is allowed to flow through. The number of drops per minute issuing from the vein is recorded on a drum—an index of the vasoconstricting or vasodilating action of the serum. The influence of various drugs was also studied. The absolute number of the drops was not regarded, as this varied with the different specimens of ears. The important point was the difference between the drops yielded by the normal serum, the pregnant serum and the toxicosis serum. In the twenty tests made comparing the serum from normal pregnant and nonpregnant women, the number of drops was always more numerous with the pregnant than with the non-

pregnant serum. This Krawkow rabbit ear technic thus can be utilized as a rather complicated biologic test for pregnancy. The serum from a pregnant woman with eclampsia displayed a very marked vasoconstricting action; the number of drops fell to 5 in comparison to the 25 drops with pregnancy serum and the 13 drops with nonpregnant serum in a given period. After the eclampsia had subsided, the number of drops was found normal again. Even smaller numbers of drops were obtained in pregnancy toxic kidney disease or dermatoses, confirming the presence in the blood of some substance with an intense vasoconstricting action. With the uncontrollable vomiting of pregnancy, a similar action was evident but it was much less pronounced than with any of the other pregnancy toxicoses. This suggests that the etiology of pregnancy hyperemesis is different from that with eclampsia and other pregnancy toxicoses. Tests on the surviving intestine confirmed the abnormal vasconstricting action of the blood serum in pregnancy toxicoses. Normal pregnancy serum, on the other hand, has the opposite action, dilating the vessels, as is evident from the nearly double number of drops per minute. The toxic substances inducing the vasoconstriction seem to stand in close relation to the amins. They are probably connected with the pituitary body; they do not seem to have anything to do with the suprarenals and thyroid.

76. **Uterine Cancer.**—Egli gives the present status of 80 women who had had the uterus removed on account of cancer during the ten years before 1911. The operability of the 325 cases of uterine cancer was 50.7 per cent. Of the group of 80, 33.75 per cent. had no recurrence for over five years. Of this group of 27 surviving for over five years, the operation in the 14 cervix cases had been exclusively vaginal, as also in 12 of the 13 corpus cancers. The vaginal and abdominal technics were applied in about an equal number of cases, but only one of the abdominally operated on is known to be living over five years afterward.

77. **Severe Anemia in Pregnant Women.**—Weidenmann does not declare that the pregnancy was the cause of the pernicious anemia in the two cases described, but this is suggested by the marked improvement which followed delivery in one case, and by the return of the anemia at each pregnancy in the other case.

78. **Tubal Fibroma.**—Herde has found records of only twenty cases of tubal fibroma and none in which the growth was on the abdominal end of the tube as in the case he reports. It had not induced any symptoms until torsion of the pedicle caused sudden severe illness and an operation under the diagnosis of appendicitis.

Gazzetta degli Ospedali e delle Cliniche, Milan

May 5, 1918, **39,** No. 36

79 Variola in Pregnant Women. C. Fino.—p. 355.

May 9, 1918, **39,** No. 37

80 *Tuberculosis of the Genital Organs. F. R. Varaldo.—p. 365.
81 *Brittle Bones with Blue Sclerotics. A. Marconi.—p. 367.

May 12, 1918, **39,** No. 38

82 *Skull Wounds. E. Santoro.—p. 373.

80. **Genital Tuberculosis.**—In the case described by Varaldo, the diagnosis of gonorrheal salpingo-ovaritis seemed plausible at first, but the insidious onset, the youth of the patient, and the absence of any history of abortions or gonorrhea suggested the possibility of tuberculosis. With tuberculous salpingitis there are none of the attacks of violent pain common with ordinary inflammatory processes in the adnexa. Granulations or other signs of tuberculosis on the uterine cervix or scrapings from the uterus may suggest the true nature of the trouble. Tuberculosis should always be suspected when a virgin develops bilateral ovary and tube disease, especially when menstruation has been scanty and the genital organs seem to be backward in their development. In the case described there had been vague symptoms from the internal genitals for over five years, sacrolumbar pains and pains in the lower bowel, leukorrhea and occasionally frequent and somewhat painful micturition, but limpid urine and never high fever. The adnexa were enlarged and adherent to uterus, intestines and pelvic walls. On one side the mass felt the size of a mandarin orange. The uterine cervix seemed to be normal except for a small erosion and the greenish yellowish dense secretion. Panhysterectomy by subtotal amputation of the uterus was followed by smooth recovery.

81. **Blue Sclerotics.**—The young soldier had brittle bones, with numerous fractures, and visible hypotrophy of the circulatory apparatus besides the blue sclerotics. Marconi theorizes that some arrest in the development of the mesenchyma from inherited or acquired causes would explain the three features of such cases, the defective development of the sclerotics, bones and circulatory apparatus.

82. **Skull Wounds.**—Santoro gives the details in turn of his forty-seven cases of skull wounds. In one case there was hemiplegia on the same side as the wound evidently from injury of the brain on its impact against the opposite side of the skull at the time of the fracture. The focal symptoms usually became accentuated after the operation, but then they subsided as recovery progressed. When they persisted and became progressively accentuated, some infectious complications were always found.

Pediatria, Naples

June, 1918, **26,** No. 6

83 *Associated Infections. S. Maggiore.—p. 321.
84 *Nitrogen Metabolism in Idiots. G. Caronia.—p. 336.

83. **Associated Infections.**—Maggiore describes a number of cases in young children of typhoid plus malaria or Malta fever, of measles plus dysentery, and of leishmaniasis plus Malta fever. The differential diagnosis is practically impossible without laboratory aid, as the associated infections modify each other to a remarkable extent. The general influence also is to aggravate each. Specific serotherapy and vaccine therapy proved remarkably effectual in some, especially in the typhoid plus Malta fever group, and, with quinin, in the typhoid-malaria group. No benefit from vaccine treatment was evident in the measles-dysentery cases, the three children dying. The one infant also died that presented mixed internal leishmaniasis and Malta fever.

84. **Nitrogen Metabolism in Idiots.**—Caronia's tabulated findings of the nitrogen metabolism in mongoloid idiocy and in myxo-idiocy confirm the different nature of these two forms of idiocy. The mongolian idiocy was distinguished by notable retention of nitrogen and increased elimination of amino-acids. Under the influence of thyroid treatment, the metabolism seemed to be whipped up to an actual process of disintegration, the phenomena resembling those in exophthalmic goiter. With myxo-idiocy, on the other hand, the metabolism is decidedly irregular, but under the thyroid treatment it became regular, and the metabolism findings approximated those in normal subjects. No tendency to hyperthyroidism was observed. This behavior of myxo-idiocy under thyroid treatment confirms the great influence exerted by the thyroid in myxedematous idiocy, and justifies anew systematic thyroid treatment.

Policlinico, Rome

June 2, 1918, **25,** No. 22

85 *Intravascular Tamponing of Artery. A. Caucci.—p. 509.
86 *Initial Syphilitic Lesions in Nasal Fossas. G. Basile.—p. 510.
87 *Universal Pincers. A. L. Soresi.—p. 514.

85. **Intravascular Tamponing of Artery.**—In two cases Caucci succeeded in arresting hemorrhage from an artery by plugging the lumen of the artery with a wad of gauze introduced from below. In the first case the common carotid was thus plugged after a gunshot wound of the internal maxillary. The external carotid had suppurated after it had been ligated and the common carotid had been ligated and suppurated also. The recurring hemorrhage was arrested with the finger, and then the plug of gauze was introduced directly into the carotid artery just above the sternoclavicular articulation. The gauze plug was held in place with a tight dressing and there was no further hemorrhage. The gauze was removed the twelfth day; the whole procedure had been aseptic. In a second case the internal carotid was ligated and, through an opening made just above the ligature, the gauze plug was introduced into the artery and pushed up toward the bleeding point. The artery was then ligated with the plug inside. Hemorrhage was definitely arrested. Twenty

days later the plug was removed; it was found putrid, probably from microbian invasion from a suppurating otitis media, although the wound had healed by primary intention, and there were no further disturbances. The fact that no more blood escaped from the ear as the plug was pushed up in the artery confirms that the hemostasis was due to the plug as, before this, compression of the artery did not suffice to arrest the hemorrhage from the ear, and tamponing the ear had no effect as the blood poured through the eustachian tube into the mouth. Tests on the cadaver showed that a plug of gauze introduced into the internal carotid in this way can be pushed up to and reach beyond the angle of the carotid canal. The principle seems thus established that it is possible to plug an artery from sound tissue below the bleeding point by pushing a long and slender roll of gauze up in the lumen of the vessel until it plugs and closes the opening in the artery wall. The method is adapted for arteries when the bleeding point is inaccessible, or when from changes in the artery wall the thrombus forming after ligation softens and drops off, thus entailing repeated secondary hemorrhage. Experiments since on dogs have confirmed the feasibility of the method and its reliability in appropriate cases.

86. **Primary Syphilitic Lesion in Nose.**—Basile reports three cases in which the primary lesion developed in the nose. In one man of 30, it assumed a diphtheroid-erosive form, with intense headache and profuse nasal secretion, all on the left side, with fever, and nocturnal exacerbations. No benefit was derived from two injections of diphtheria antitoxin, and the appearance of skin lesions elsewhere three weeks later cleared up the diagnosis of syphilis. In another case a girl of 12 developed a neoplasm in the nose. It was excised and found to be of syphilitic nature, with spirochetes. The child had the charge of an infant who proved to have inherited syphilis. The initial syphilitic lesion may assume a form suggesting impetigo, and this is difficult to recognize; it is extremely rare. The presence of a few enlarged glands hard, elastic and indolent, in the submaxillary region is suspicious. There is usually a tendency to anemia and headache on the side affected. The syphiloma is generally found on the outer wall of the nasal fossa but it may be on the septum. It subsides as the disease approaches the secondary phase, and there is none of the destructive action of a tertiary nasal lesion. The rapid development excludes cancer. The Wassermann reaction is seldom positive with these initial lesions.

87. **Universal Spring Pincers.**—The pressure of the thumb on the top of the slender metal tube, about 20 cm. long, releases three hooks which emerge from the other end, spreading and seizing any object whatever its shape. This *pinza pigliatutto* is proving very useful for seizing foreign bodies in wounds, in the air passages, etc., or picking up articles of any kind.

Riforma Medica, Naples

May 18, 1918, **34**, No. 20

88 *Cobra Venom Reaction in Cancer. C. B. Farmachidis.—p. 382.
89 Bronchopulmonary Spirochetosis. S. Fichera.—p. 384.
90 Crystals in Urine from Magnesium Metabolism. A. Cavazzani.—p. 387.
91 *Complications of Wounds of the Brain. E. Aievoli.—p. 390.

88. **Cobra Venom Reaction in Diagnosis of Cancer.**—Farmachidis' new series of tests sustain his previous assertions that the activation by cobra venom of the hemolytic action of the serum in the deviation of complement test occurs only with serum from persons with malignant disease. With rabbit red corpuscles, a positive reaction was pronounced in his total of fifty-three out of sixty-four persons with carcinoma. In all the other eleven cases, the reaction occurred, but not until after the twentieth hour (between the twentieth and the thirty-fifth hours), and consequently he lists these responses as negative. In sixty-two persons with tumors of benign character, fibromas, cystomas, etc., there was no trace of a positive reaction. He now uses 0.10 c.c. of a 1 per twenty thousand solution of the cobra venom, that is, one part of a 1 per five thousand solution of cobra venom in three parts physiologic saline. In his previous research he used always the 1 per five thousand solution of the cobra venom, but found that this alone sometimes hemolyzed guinea-pig red corpuscles, and now he uses one fourth of this strength. His conclusions are all in favor of the value of the cobra venom reaction as an aid in the diagnosis of malignant disease.

91. **Complications of Brain Wounds.**—Aievoli reviews some recent literature on the subject of brain wounds thus analyzing a total of 2,357 in British and 6,664 in French hospitals. Aside from the transient cerebral manifestations at first, there seems to be no question that a man who has been trephined for a wound of the skull and brain is often left with reduced mental or professional capacity, and there may be symptoms ranging from headache to vertigo, from asthenia to amnesia, with diminished power of attention and association of ideas, and exaggerated emotivity. Hyperemia of the papilla, hypertension, abnormal albumin content of the cerebrospinal fluid, and labyrinth disturbances are also common. At the same time, Marie has not known of a single instance of general paralysis or dementia developing as a consequence of a brain wound, and Tuffier has only encountered 0.64 per cent. cases of serious mental impairment. The outlook is more favorable with hemiplegia from injury of the prefrontal lobe and the rolandic region and vicinity, gradual improvement being not infrequent.

Anales de la Facultad de Medicina, Montevideo

March-April, 1918, **1**, No. 2

92 *Tabes. E. Odriozola.—p. 119.
93 *Single Kidney R. P. Varela.—p. 125.
94 *Peruvian Verruca. J. Arce.—p. 130.
95 *Urease Test for Urea in Urine. M. A. Velasquez.—p. 162.
96 *Hysteria versus Epilepsy. H. Valdizan.—p. 169.
97 Psychanalysis. H. F. Delgado.—p. 186.

92. **Spontaneous Fractures in Tabes.**—Odriozola's patient is a tabetic of 36 with spontaneous fractures of the left ilium. The first insidious symptoms of the tabes dated from about two years before.

93. **Hydronephrosis in Single Kidney.**—The girl of 16 had right hydronephrosis with hematuria and fever, and the bladder was scattered with tubercles. The right ureter was easily catheterized but the mouth of the left ureter could not be located. The catheter was left in the right ureter for ten hours, and the urine accumulating in the bladder was assumed to come from the left ureter. The right kidney was consequently removed and proved to be almost completely destroyed. When the anuria had persisted for twenty-four hours and no opening into the left ureter could be detected, the left side was opened and the complete absence of any kidney was determined. After the nephrectomy the condition was excellent for four days. Then there were some false desires to urinate, coinciding with the hot enemas given. The pulse kept good and there were no disturbances till the twelfth day, when fatal coma developed.

94. **Peruvian Verruca.**—Arce's presentation of the present status of our knowledge of Peruvian verruca is accompanied by photographs of a number of typical cases. There was associated malaria in nearly every case and other complications are common. Without complications spontaneous retrogression is the rule.

95. **Urease Test for Urea.**—Velasquez is professor of medical chemistry at the University of Lima, and he confirms the recent statements by Marshall, Van Slyke and others in regard to the reliability and accuracy of the urease test for determination of urea in the blood serum and urine.

96. **Neuroses in Early History of Peru.**—Valdizan is compiling the history of hysteria and epilepsy in the seventeenth and later centuries in Peru as recorded in the writings of the priests and other historians of those days. Some of the cases are described as cures wrought by miracles, but most of them were brought into prominence by self-confessed crimes, an actual epidemic of confessions of preposterous crimes by priests and others who were duly penalized or executed in consequence. The history of these *locos de la colonia* forms an interesting page of the ledger of hysteria and epilepsy.

Prensa Medica Argentina, Buenos Aires

May 10, 1918, **4**, No. 34

98 *Gastric and Duodenal Ulcer with Tardy Inherited Syphilis. M. R. Castex and A. Mathis.—p. 495.
99 *Prophylaxis of Malaria. A. Barbieri.—p. 507. G. A. Alfaro.—p. 508.

98. **Tardy Inherited Syphilis in Relation to Gastric and Duodenal Ulcer.**—Castex and Mathis do not hesitate to affirm on the basis of their personal observation that, before the age of 30, tardy inherited syphilis can be incriminated for 90 per cent. of gastric and duodenal ulcers, and acquired syphilis for the remaining 10 per cent. After the age of 30, the proportions are reversed, 90 per cent. being due to acquired syphilis and 10 to the inherited taint. A year ago they declared that syphilis was a frequent cause of gastric and duodenal ulcer, but later experience has convinced them that it is the exclusive cause. The gastroduodenal disturbances begin between the ages of 14 and 38, and males furnish the largest contingent. Severe constipation often accompanies them; possibly the same cause is responsible for both. In one of the fifteen cases reported in detail, perforation occurred soon after the first symptoms had been noted; in the others the disturbances had kept up for from one to nine years in the ten cases given operative treatment, and in from three to twelve years in the cases without anatomic corroboration. In every one of the ten operative cases, the intervention had failed to relieve, but seven were completely cured with mercurial treatment, and the others materially improved. The operation disclosed in each case an adhesive membranous plastic peritonitis, circumscribed or regional. The disturbances during the first three years displayed a tendency to periodicity. This is a feature common to a number of the manifestations of tardy inherited syphilis. Exacerbation at night is also a feature of syphilitic lesions, and explains the "night pains" with an ulcer in stomach or duodenum. Dieting and medical measures have only palliative action outside of specific treatment. This should not be delayed till irreparable lesions become installed. In diagnosis, the stigmata of inherited syphilis are more reliable than laboratory tests.

99. **Prophylaxis of Malaria.**—Alfaro is the new president of the national Departamento de Higiene, and Barbieri is chief of the section on malaria in the service. They outline ways and means for the more vigorous campaign planned to control malaria.

Revista Medica del Uruguay, Montevideo

April, 1918, **21,** No. 4

100 Traumatic Hernia? J. May, J. Iraola and F. A. Olivera.—p. 149.
101 *Congestions with Hypothyroidism. J. C. M. Fournier.—p. 155.
102 Anemia with Splenomegaly and Paratyphoid A. V. Zerbino.—p. 164.

101. **Congestive Form of Thyroid Deficiency.**—Fournier's patient is a woman of 35 who presents an extremely complicated clinical picture from disturbances in the glands with an internal secretion, the thyroid predominating. Her mother had had cerebral congestion with hemiplegia, as also two of her mother's brothers. The clinical history shows that there have been a succession of morbid processes of the nature of acute congestion affecting different tissues at different times. The numerous operations confirmed the congestive character of the morbid processes in bones, kidneys, intestines, etc. The various manifestations had been diagnosed in turn as subacute osteomyelitis, kidney stones, tuberculosis in bowels, kidneys or lungs, hysteric anuria, and syphilis of the nervous and cardiovascular systems. During the twenty years since these disturbances first became manifest at the age of 15, treatment had been applied on these various diagnoses until finally their transient nature was recognized, and the occasional simultaneous appearance of several morbid processes of the kind pointed to a single cause. Tentative thyroid treatment arrested the hematuria, tendency to obesity, and somnolency, falling of the hair, attacks of pains suggesting angina pectoris, and edema of the limbs, and confirmed the hypothyroidism as the main factor in the multiple manifestations. Specific treatment as for syphilis, had not modified them in the least except possibly to aggravate them. A special and misleading feature of the case described was the slight fever which often accompanied the congestive phenomena. Fournier suggests that the tendency to apoplexy in her mother and two uncles may have been also a manifestation of hypothyroidism of this congestive type. Thyroid deficiency as a possible factor in certain cases of angina pectoris is also suggested by this case. The nonrecognition of the thyroid deficiency for so many years allowed arteriosclerosis to become installed early. In conclusion, Fournier calls attention to the paradoxic reactions in the case, the bradycardia after ingrafting of thyroid tissue, and the glycosuria after iodin treatment.

Revista de Medicina y Cirugia Practicas, Madrid

May 7, 1918, **120,** No. 1505

103 *Emotional Stress as Factor in Tabes. E. F. Sanz.—p. 129.

May 14, 1918, **120,** No. 1506

104 Pediculosis and Skin Diseases. E. A. S. de Aja.—p. 161. Concluded in No. 1507, p. 193.

103. **Emotional Stress as Factor in Tabes.**—Sanz is convinced that emotions play a large part in the development of tabes. Besides traumatism, getting chilled through, and sexual excesses, emotional stress is capable of serving as the occasional, accessory, subordinate factor which may start the avalanche. In a recent case a robust man of high standing in his profession had a dispute with a subordinate who threatened to shoot him. The next day he presented gastric symptoms with jaundice and in a few days the symptoms of severe tabes became apparent.

Revista Sud-Americana de Endocrinologia, Buenos Aires

May, 1918, **1,** No. 5

105 Case of Slow Endocarditis. A. C. Grapiolo and Spada.—p. 115.

Semana Medica, Buenos Aires

May 2, 1918, **25,** No. 18

106 Destructive Sun-Burn. N. V. Greco.—p. 449.
107 Vaccination in Army against Typhoid. R. D'Ovidio.—p. 503.
108 Public Health Service Should Equalize Supply of Physicians throughout the Country. E. Accame.—p. 512.
109 *Differentiation of Gallstones and Cancer. Giacobini.—p. 514.
110 Persisting Headache May be Symptom of Thyroid Insufficiency. G. Giacobini.—p. 516.
111 Death Rate from Infectious Diseases at Buenos Aires, 1868-1917. E. R. Coni.—p. 517.
112 Prophylaxis of Tuberculosis and Venereal Disease. E. R. Coni.—p. 517; p. 518.

109. **Differentiation of Obstruction from Gallstones and from Cancer.**—Giacobini has often found it difficult to distinguish between the symptoms caused by cancer of the head of the pancreas and by obstruction of the common bile duct by gallstones. The symptoms are practically identical with each, he says, but the urine findings may throw some light on the true condition. With cholelithiasis and with pancreatitis inducing stenosis, he found uric acid abundant in the urine with both, but there was steatorrhea, besides, with the latter. With a calculus in the duct of Wirsung there is both uric acid in excess and steatorrhea, but no jaundice. With a gallstone impacted at the ampulla of Vater, there were always all three, uric acid in excess, steatorrhea and jaundice. On the other hand, with cancer of the head of the pancreas the uric acid content of the urine keeps within normal range until finally it becomes subnormal, while with gallstone trouble it was always above normal.

Siglo Medico, Madrid

April 20, 1918, **65,** No. 3358

113 *Duration of Life in Living Beings. G. Hurtado.—p. 302.
114 Cooperation of Home and School. C. Juarros.—p. 303.

April 27, 1918, **65,** No. 3359

115 The Wassermann Reaction. E. M. Villapadierna.—p. 322. Continuation.

113. **Duration of Life.**—Hurtado thinks there is a close connection between what has been observed in Loeb's and others' researches on parthogenesis, the metamorphosis of tadpoles, etc., and the phenomena of hibernation. The environing temperature seems to have a decisive influence on the duration of each phase of life under these conditions. The temperature seems to act by checking or promoting certain chemical reactions, and these reactions in turn originate hormones or toxins which are able to terminate the existing phase and initiate the next phase. If this proves to be the fact, it may yet be possible to produce certain hormones at will, hormones capable of reviving the creative power of

aged cells, keeping up a series of renovations. This would make it possible to prolong the phases of life and thus extend the duration of life far beyond the limits we know now. Experimental research is the only key to these problems.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

July 9, 1917, **18**, No. 1

116 *Acute Lymphatic Leukemia. S. Tachigara.—p. 1.
117 The Acetabulum in Japanese and Chinese. K. Shiino.—p. 23.
118 Physiology of Sweat Secretion. K. Muto.—p. 39.
119 Spontaneous Rupture of Intracranial Portion of Right Internal Carotid. Y. Kurosawa.—p. 51.
120 Asthenic Anemia. M. Kamo.—p. 69.
121 Localization of Rabies Virus. T. Koyano.—p. 91.

116. **Acute Lymphatic Leukemia.**—Tachigara states that four cases of this disease have been encountered in the course of ten years at the Tokyo medical clinic. He here reports the details of a case in a student previously healthy except that tonsillectomy had been required three years before. After a month of swelling of the glands in the neck, high fever, thirst, hemorrhagic diathesis and other signs of sepsis, the disease proved rapidly fatal, death occurring in a week, from hemorrhage in the pons region. Lymphocytes formed over 90 per cent. of the leukocytes.

120. **Asthenic Anemia.**—The clinical course and necropsy findings confirmed that the asthenic or hyporegeneration anemia in the man of 47 was the result of long continued undernourishment. The course was subacute until there came a sudden aggravation. Ulceration in the tonsils and gums seemed only aggravating, not causal, elements in the clinical picture.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

April 20, 1918, **1**, No. 16

122 *Paresis of Malarial Origin. B. M. Van Driel.—p. 1076.
123 *Periodicity in Ferment Action. J. T. Groll.—p. 1085.
124 *Cure of a Sick Coolidge Tube. C. H. Kok.—p. 1093.

122. **Paresis of Malarial Origin.**—In Driel's three cases the discovery of the parasites of tertian malaria in the blood seemed to be the only possible explanation of the focal symptoms observed. In one they took the form of attacks of jacksonian epilepsy with consecutive facial paresis. In the others there was spastic spinal paralysis or symptoms suggesting an abscess or tumor in the rolandic area. In the latter case an operation was considered before the blood findings cleared up the diagnosis. In all the cases the cerebral or spinal manifestations subsided under quinin, confirming the malarial origin. In the first two the malaria was in a masked form at first, but later threw off all disguise and appeared as a typical severe tertian. The train of symptoms in the first two cases certainly belong in the category of false brain tumors, but Driel says he does not know of any textbook on neurology that mentions malaria as a possible cause for such a syndrome. Wherever there is a chance for malaria to occur, it should be suspected, whatever the clinical manifestations may be, and the blood should be examined.

123. **Periodicity in Ferment Action.**—Groll recalls that in his laboratory, in 1914, De Jonge noticed that pancreatic juice kept on ice displayed fluctuations in its ability to digest lipase. Groll has been studying urease and ptyalin, and has confirmed that their catalytic power waxes and wanes. This periodicity is very distinct with pancreas lipase, kept in a refrigerator, and with urease, at 35 and 45 C. These periodic fluctuations occur also with ptyalin and with colloidal metals, but the fluctuations occur so rapidly with these that it is difficult to trace them, especially as the range of variation is less with them. Hence differences in the intensity of the ferment action at different times need not be ascribed to defects in the technic, as it seems to be a common property of ferments, possibly a consequence of their colloidal condition.

124. **Cure of a Sick Coolidge Tube.**—Kok relates that his Coolidge tube was not acting properly, and the cause of its "sickness" he traced to a small crater in the tungsten with minute scales of metal projecting from it. As the current was slowly turned on up to 4 milliamperes these scraps became white hot before the tungsten around was even red hot. By rapidly increasing the current up to 20 or 25 milliamperes, these minute flakes became fused, and he has had no further trouble with the tube with 1,200 ten minute 4 amperes' exposures since.

Ugeskrift for Læger, Copenhagen

May 23, 1918, **80**, No. 21

125 *Xerophthalmia and Dystrophy in Infants. II. C. E. Bloch.—p. 815. Continuation.
126 Lye in Laundering Does Not Sterilize. M. Christiansen.—p. 827.
127 *Roentgen Treatment of Brain Tumor. S. Nordentoft.—p. 829.

125. **Dystrophy and Xerophthalmia in Infants.**—In this second communication on the dystrophy and xerophthalmia developing in infants fed on separator milk, or other defective diet, Bloch says that his experiences in 1917 confirmed his previous statements (summarized in THE JOURNAL, May 19, 1917, p. 1516). Among the 23 cases of his 1917 series, there were 11 cases in which the eye symptoms had lasted for only a few weeks and only xerosis had developed. Six had been under his own observation in a children's home for over a year. They were known to have been previously normal, and the development of the xerosis under his eyes was as distinct and free from complications as in a laboratory experiment on an animal. The xerosis developed in half of the 16 infants in one dormitory, all about the same time, in May and June, but there were no cases among the other 78 infants in the other departments of the home. All the infants got food supposed to be good and nourishing, with albumin, vegetable margarin, carbohydrates and salt, potato soup and fruit juices, but the one group getting separator milk lost weight, and half of them developed xerosis. The vegetable margarin used in the institution evidently is not capable of supplying the substances lacking in the separator milk. But the children began to thrive at once and the xerosis subsided when cod liver oil was given the infants. All the milk used in the establishment was pasteurized, so this could not have been responsible for the xerosis group, although it may have aided in destroying the scanty valuable properties left in the separator milk, as this required extra long cooking in the gruel form. In another group of 8 cases, from the Rigshospital, the children were from 9 months to 10 years old, there was hemeralopia in 3 and keratomalacia in 3, bilateral in one case. Separator milk had been used for most of these children, with likewise a lack of lipoid elements, although the food otherwise was nourishing and varied. All this group showed general dystrophy of the type Bloch entitles alipogenetic or centrifuged-milk dystrophy, but 3 of these children had been fed on whole milk and one with canned cream besides, prepared with long cooking. The deficiency in certain fats was thus responsible for the xerophthalmia, the checking of the growth and the dystrophy.

Bloch's last group of 6 cases presented the typical picture of what Czerny calls *Mehlnährschaden* but Bloch's term for it is carbohydrate dystrophy. Three of the infants were under 6 months and only one was over a year old. The xerophthalmia was far advanced in all, with total necrosis of the cornea in one case and of both corneas in another. In addition to the symptoms presented by the fat-deficiency cases, the tissues were edematous and puffy, and the muscles were rigid; in 3 this amounted to actual hypertony of the muscles. On a change to whole milk or breast milk plus cod liver oil, with restriction of the carbohydrate intake, all the symptoms subsided, including the edema. "War edema" seems to be a similar deficiency phenomenon. One of the 23 infants died, the others recovered without loss of sight, except in one child with necrosis of both corneas when first seen.

127. **Roentgen Treatment of Brain Tumor.**—The young man presented symptoms suggesting a rapidly growing glioma in the frontal brain but it was impossible to locate it. Roentgen treatment was applied to the sides, vertex of the skull and the forehead, hoping thus to hit on the tumor at some point. The sitting was long and tedious as the patient's hands had to be held to keep him from grabbing at the light or wires. The condition grew worse in the following five days, with incontinence of stools and urine and subfebrile temperature. Then came a turn for the better which amounted to a clinical cure, and the man is still well a year later.